

RESOLUTION NO. -2013, AMENDING THE SUFFOLK COUNTY CLASSIFICATION PLAN AND THE 2013 OPERATING BUDGET IN CONNECTION WITH THE NEWLY CREATED SUFFOLK COUNTY TRAFFIC AND PARKING VIOLATIONS AGENCY

WHEREAS, at the time the budget was adopted the specific staffing needs of the Traffic and Parking Violations Agency were unknown; and

WHEREAS, policies and procedures and the development of Traffic and Parking Violations software have better defined the job duties and responsibility of Traffic and Parking Violations personnel; and

WHEREAS, review by the Department of Civil Service has shown that new titles are necessary to fulfill the requirements of the Traffic and Parking Violations Agency; and

WHEREAS, the County Executive in consultation with the Legislature desires to create and staff the agency with County Employees; and

WHEREAS, the transfer of funding from within the Traffic and Parking Violations Agency to the permanent salary lines is needed to hire County Employees to staff the Traffic, Parking and Violations Agency; now, therefore be it

1st RESOLVED, that the Suffolk County Classification and Salary Plan be and is hereby amended as follows:

ADDITIONS TO CLASSIFICATION AND SALARY PLAN

Spec. No.	J/C	Job Title	Gr	BU
9424	P(E)	Deputy Director of Traffic and Parking Violations Agency	34	21
6172	P(E)	Assistant County Attorney (Special Assignment)	19	21
0050	C	Justice Court Clerk	14	02

MODIFICATION TO CLASSIFICATION AND SALARY PLAN

Spec. No.	J/C	Job Title	Gr		BU
			From	To	
9425	P(U)	Exec. Director of Traffic and Parking Violations Agency	35	39	21

and be it further

2nd RESOLVED, that the Suffolk County Temporary Classification and Salary Plan be and is hereby amended as follows:

ADDITIONS TO THE TEMPORARY CLASSIFICATION AND SALARY PLAN

<u>Spec. No.</u>	<u>J/C</u>	<u>Job Title</u>	<u>Rate of Pay</u>
0212	NC(PT)	Account Clerk Typist	\$15.00/hr.
6172	P(E)	Assistant County Attorney (Special Assignment)	\$20.00/hr.
6210	P(E)	Judicial Hearing Officer	\$300/day

and be it further

3rd **RESOLVED**, that the 2013 County Operating Budget is hereby amended as follows and the County Comptroller and the County Treasurer be and hereby are authorized to transfer the following funds and authorizations from within Traffic and Parking Violations Agency to the permanent and temporary salary accounts:

FUND	DEPT	UNIT	OBJ	OBJECT NAME	2013 Current	2013 Modified	Change	EXP/REV
136	TVB	1130	1100	Permanent Salaries	\$258,941	\$908,941	\$650,000	Expense
136	TVB	1130	1130	Temporary Salaries	\$66,225	\$216,225	\$150,000	Expense
136	LAW	1426	1100	Permanent Salaries	\$0	\$150,000	\$150,000	Expense
136	LAW	1426	1130	Temporary Salaries	\$0	\$150,000	\$150,000	Expense
136	TVB	1130	4560	Fees For Services: Non-Employ	\$1,820,932	\$720,932	(\$1,100,000)	Expense

and be it further

4th **RESOLVED**, that this Legislature, being the State Environmental Quality Review Act (SEQRA) lead agency, hereby finds and determines that this resolution constitutes a Type II action pursuant to Section 617.5(c)(20) and (27) of Title 6 of the NEW YORK CODE OF RULES AND REGULATIONS (6 NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection, and the Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination of non-applicability or non-significance in accordance with this resolution.

DATED:

APPROVED BY:

County Executive of Suffolk County

Date:

1193

STATEMENT OF FINANCIAL IMPACT
OF PROPOSED SUFFOLK COUNTY LEGISLATION

1. Type of Legislation Resolution <u> X </u> Local Law _____ Charter Law _____		
2. Title of Proposed Legislation RESOLUTION NO. _____-2012, AMENDING THE SUFFOLK COUNTY CLASSIFICATION PLAN AND THE 2013 OPERATING BUDGET IN CONNECTION WITH THE NEWLY CREATED SUFFOLK COUNTY TRAFFIC AND PARKING VIOLATIONS AGENCY.		
3. Purpose of Proposed Legislation SAME AS ABOVE		
4. Will the Proposed Legislation Have a Fiscal Impact? Yes <u> </u> No <u> X </u>		
5. If the answer to item 4 is "yes", on what will it impact? (circle appropriate category)		
County	Town	Economic Impact
Village	School District	Other (Specify):
Library District	Fire District	
6. If the answer to item 4 is "yes", Provide Detailed Explanation of Impact N/A		
7. Total Financial Cost of Funding over 5 Years on Each Affected Political or Other Subdivision. N/A		
8. Proposed Source of Funding 2013 Operating Budget		
9. Timing of Impact - UPON ADOPTION		
10. Typed Name & Title of Preparer Neil Toomb Intergovernmental Relations Coordinator	11. Signature of Preparer	12. Date: 2/27/13

1194

Intro. Res. No. -2013
Introduced by Legislator Krupski

Laid on Table 3/5/13

**RESOLUTION NO. - 2013, ADOPTING LOCAL LAW NO.
-2013, A LOCAL LAW TO EXPAND EXEMPTIONS TO
BOATING SAFETY INSTRUCTION REQUIREMENTS**

WHEREAS, there was duly presented and introduced to this County Legislature at a meeting held on , 2013, a proposed local law entitled, "**A LOCAL LAW TO EXPAND EXEMPTIONS TO BOATING SAFETY INSTRUCTION REQUIREMENTS**" now, therefore, be it

RESOLVED, that said local law be enacted in form as follows:

LOCAL LAW NO. -2013, SUFFOLK COUNTY, NEW YORK

**A LOCAL LAW TO EXPAND EXEMPTIONS TO BOATING
SAFETY INSTRUCTION REQUIREMENTS**

**BE IT ENACTED BY THE COUNTY LEGISLATURE OF THE COUNTY OF
SUFFOLK**, as follows:

Section 1. Legislative Intent.

This Legislature hereby finds and determines that the County of Suffolk enacted Local Law No. 58-2012 to establish boating safety instruction requirements for residents of Suffolk County operating pleasure vessels on Suffolk County waters.

This Legislature also finds that Local Law No. 58-2012 exempted certain persons from the law's requirements, including members of the United States Coast Guard, the United States Coast Guard Auxiliary and the United States Navy.

This Legislature further finds that retired members of the United States Coast Guard, the Coast Guard Auxiliary and the United States Navy should not be required to undergo further boating instruction before operating a vessel on Suffolk County waters.

Therefore, the purpose of this local law is to exempt retired members of the United States Coast Guard, the United States Coast Guard Auxiliary and the United States Navy from the boating instruction requirements of Local Law No. 58-2012.

Section 2. Amendments.

Section 4(A) of Local Law No. 58-2012 is hereby amended to read as follows:

- A. The provisions of this law shall not apply to persons certified by the Commissioner of the New York State Parks, Recreation and Historic Preservation as boating safety instructors; instructors of the United States Power Squadrons; members and retired members of the United States Coast Guard, United States Coast Guard Auxiliary and the United States Navy; police officers acting pursuant to assigned duties; peace officers acting pursuant to assigned duties; lifeguards acting pursuant to assigned duties; fire and rescue personnel acting pursuant to assigned duties; persons licensed to operate

vessels by the United States Coast Guard, the Merchant Marine or the Canadian Coast Guard; and persons who hold boating safety certificates issued by other states or municipalities.

Section 3. Applicability.

This law shall apply to actions occurring on or after the effective date of this law.

Section 4. Severability.

If any clause, sentence, paragraph, subdivision, section, or part of this law or the application thereof to any person, individual, corporation, firm, partnership, entity, or circumstance shall be adjudged by any court of competent jurisdiction to be invalid or unconstitutional, such order or judgment shall not affect, impair, or invalidate the remainder thereof, but shall be confined in its operation to the clause, sentence, paragraph, subdivision, section, or part of this law, or in its application to the person, individual, corporation, firm, partnership, entity, or circumstance directly involved in the controversy in which such order or judgment shall be rendered.

Section 5. SEQRA Determination.

This Legislature, being the State Environmental Quality Review Act (SEQRA) lead agency, hereby finds and determines that this law constitutes a Type II action pursuant to Section 617.5(c)(20), (21), and/or (27) of Title 6 of the NEW YORK CODE OF RULES AND REGULATIONS (6 NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection. The Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination of non-applicability or non-significance in accordance with this law.

Section 6. Effective Date.

This law shall take effect immediately upon filing in the Office of the Secretary of State.

___ Underlining denotes addition of new language

DATED:

APPROVED BY:

County Executive of Suffolk County

Date:

OFFICE OF THE COUNTY LEGISLATURE

COUNTY OF SUFFOLK

GEORGE NOLAN
COUNSEL TO THE LEGISLATURE
email: george.nolan@suffolkcountyny.gov



WILLIAM H. ROGERS BUILDING
P.O. BOX 6100
HAUPPAUGE, NY 11788-0099
(631) 853-5494 (PHONE)
(631) 853-4415 (FAX)

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DATE: FEBRUARY 28, 2013
TO: CLERK OF THE COUNTY LEGISLATURE
RE: MEMORANDUM OF COUNSEL TO THE LEGISLATURE PURSUANT TO RULE 28

PROPOSED LOCAL LAW YEAR 2013

TITLE: I.R. NO. -2013; A LOCAL LAW TO EXPAND EXEMPTIONS TO BOATING SAFETY
INSTRUCTION REQUIREMENTS

SPONSOR: LEGISLATOR KRUPSKI

DATE OF RECEIPT BY COUNSEL: 2/27/13 PUBLIC HEARING: 3/19/13
DATE ADOPTED/NOT ADOPTED: _____ CERTIFIED COPY RECEIVED: _____

This proposed law would exempt retired members of the United States Coast Guard, United States Coast Guard Auxiliary and the United States Navy from the boating safety instruction requirements of Local Law 58-2012 ("Suffolk Safety Waterway Act").

This law will take effect immediately upon its filing in the Office of the Secretary of State.

GEORGE NOLAN
Counsel to the Legislature

GN:tm

s:\rule28\28-expand exemptions boating safety

1195

Intro. Res. No. -2013
Introduced by Legislator Hahn

Laid on Table 3/5/13

**RESOLUTION NO. -2013, TO APPOINT MEMBER TO
THE FOOD POLICY COUNCIL OF SUFFOLK COUNTY (ERIN
LEIGH THORESEN)**

WHEREAS, Local Law 11-2011 established a Food Policy Council of Suffolk County consisting of 16 members; and

WHEREAS, Resolution No. 644-2011 appointed Donna Boyce as a member of the Food Policy Council as one of the two representatives of community based groups; now, therefore be it

1st RESOLVED, that Erin Leigh Thoresen, Senior Program Coordinator of Sustainable Long Island, is hereby appointed to the Food Policy Council of Suffolk County as one of the two representatives from a community-based group, to complete the unexpired term of Donna Boyce, said term of office to expire August 29, 2014, pursuant to Section 3(A)(9) of Local Law 11-2011; and be it further

2nd RESOLVED, that this Legislature, being the State Environmental Quality Review Act (SEQRA) lead agency, hereby finds and determines that this resolution constitutes a Type II action pursuant to Section 617.5(c)(20), (21) and (27) of Title 6 of the NEW YORK CODE OF RULES AND REGULATIONS (6 NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection, and the Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination of non-applicability or non-significance in accordance with this resolution.

DATED:

APPROVED BY:

County Executive of Suffolk County

Date:

S:\res\r-appt-food-policy-Thoresen

1195

ERIN LEIGH THORESEN
NEW YORK, NY • 10027

EXPERIENCE

Senior Program Coordinator, *Sustainable Long Island*, Farmingdale, NY 09/2012 - present

- Assume leadership role in coordinating projects in areas of community revitalization, brownfields redevelopment, and food equity. Develop and manage community planning and other program-related projects, including project and grant proposals, developing workplans and budgets.
- Carry out programmatic work, including community planning processes and interactive workshops; public meetings and presentations; research and analysis, and serve as liaison to community-based organizations. Current projects include: three New York State Brownfield Opportunity Area projects; Downtown Bethpage Retail Market & Revitalization Study; and managing food equity program (youth-staffed farmers' markets, Food Equity Advisory Committee, Food System Report Card, local government policy and code review).

Community Planner, *Sustainable Long Island*, Farmingdale, NY 01/2009 - 09/2012

- Develop organization's Food Equity Program, including research to document need among Long Island communities, creation of thirty-plus member Advisory Council, development of model for youth-staffed farmers' markets, conducting data research and using GIS to assist with creating online food access map, and food system report card indicator project.
- Promote community revitalization, economic development, and sustainability through research, presentations, developing recommended policies and programs, and by facilitating planning processes, including organizing interactive visioning activities, facilitating educational forums, conducting community outreach and input processes, developing implementation strategies, and writing plans.
- Carry out community planning and other program-related projects, in areas such as food equity, and brownfields redevelopment, including three Brownfield Opportunity Area projects. Work with teams consisting of agency staff, consultants, and municipal employees. Develop and execute workplans and budgets for contract and grant-funded work, including CDBG; write proposals; prepare grant reports.
- Develop and facilitate planning processes including educational forums, charrette-like workshops, and goal setting and write plans containing goals, objectives and strategies for achieving stated goals related to economic development, environmental quality, land use, and transportation.
- Supervise eight interns and activities performed by other professional staff: coordinating intern schedules and activities, developing learning objectives, projects, and workplans.
- Serve as liaison to numerous community partner groups: work directly with more than four community organizations to provide technical assistance on carrying out neighborhood improvement, sustainability, and economic development strategies and help strengthen capacity for implementing plans and projects.
- Conduct quantitative and qualitative research, including best practices on programs, policies, and regulations; prepare memos, reports, and speaking points. Present at meetings and events and coordinate workshops, panels and presentations for various regional and national speaking engagements on topics related to sustainability, economic development, environmental health, transportation, equity and food systems planning.

Intern, *Bronx Borough President's Office, Bureau of Planning and Development*, Bronx, NY 09/2008 - 01/2009

- Served as team member on Historic Preservation Task Force: researched funding sources available to owners of historically significant property; create presentation and GIS maps of selected properties. Final report examined opportunities for preservation and designation of historic properties in the borough.

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ERIN LEIGH THORESEN

• NEW YORK, NY • 10027 •

Research Assistant, *University of Michigan*, Ann Arbor, MI

10/2007 – 08/2008

- Conducted literature searches and prepared literature reviews, summaries, and bibliographies; researched potential authors and performed historical research on public housing, and planning and civil rights; assisted in preparation of article for publication for professor June Manning Thomas.
- Examined reuse of vacant and abandoned property for Professor Margaret Dewar; analyzed large parcel-level data and assessors records – including one set of 386,000 parcels - using ArcGIS, aerial imagery, and Excel; created and edited tables and diagrams, tracked and recorded all calculations and findings.
- Research contributed to publication of *The City After Abandonment* (2013), University of Pennsylvania Press.

Master's Capstone Project, *University of Michigan*, Ann Arbor, MI

09/2007 – 04/2008

- Worked in 9-person team to help non-profit client, Southwest Detroit Environmental Vision, devise strategies for mitigating fugitive dust and particulate pollution using vegetation.
- Coordinated and co-wrote winning application for \$10,000 U.S. EPA P3 Student Design Competition; co-edited and revised final report. Researched and wrote reports on best practices, case studies, the role of vegetation in reducing dust, technical "green" mitigation strategies, site preparation and planting guidelines.

EDUCATION

Master of Urban Planning, *Land Use & Environmental Planning*

University of Michigan 2008

- University of Michigan Urban and Regional Planning fellowship, 2006-2007

Bachelor of Arts, *Major: Art and Art History; Minor: French*

Kalamazoo College 2002

- Michael Waskowsky Prize for Outstanding Art Major, 2002

SKILLS

- Computer knowledge: MacOS and Windows; proficient with ArcGIS, Microsoft Office Suite. Adobe Photoshop and InDesign, Familiar with Dreamweaver, Adobe Illustrator, Google SketchUp, and SPSS; familiar with web design and social media tools and applications
- Critical analytical thinking
- Leadership, coaching, and team building
- Language: fluent in French; basic Spanish vocabulary

PROFESSIONAL DEVELOPMENT & AFFILIATIONS

- American Planning Association (member since 2007), active member of NY Metro Chapter
 - Active member of Young Planner's Group (YPG) Outreach Committee and program and Youth In Planning Program (YIP)
 - Participant in Food Access sub-committee of the Economic Development & Housing Committee Joint Program Rockaway Storm Recovery effort
 - Participant in Young Planners Mentorship program since 2010
 - Recipient of 2010 Kunz Scholarship from Long Island Section to attend National Planning Conference
- Planners Network (member since 2008)
- NCI Charrette System certified facilitator, National Charrette Institute (2009)

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ERIN LEIGH THORESEN

• 1413 AMSTERDAM AVE. APT 4B • NEW YORK, NY • 10027 • 734.277.0915 •
erin.thoresen@gmail.com

EXPERIENCE

Senior Program Coordinator, *Sustainable Long Island*, Farmingdale, NY 09/2012 - present

- Assume leadership role in coordinating projects in areas of community revitalization, brownfields redevelopment, and food equity, Develop and manage community planning and other program-related projects, including project and grant proposals, developing workplans and budgets.
- Carry out programmatic work, including community planning processes and interactive workshops; public meetings and presentations; research and analysis, and serve as liaison to community-based organizations. Current projects include: three New York State Brownfield Opportunity Area projects; Downtown Bethpage Retail Market & Revitalization Study; and managing food equity program (youth-staffed farmers' markets, Food Equity Advisory Committee, Food System Report Card, local government policy and code review).

Community Planner, *Sustainable Long Island*, Farmingdale, NY 01/2009 – 09/2012

- Develop organization's Food Equity Program, including research to document need among Long Island communities, creation of thirty-plus member Advisory Council, development of model for youth-staffed farmers' markets, conducting data research and using GIS to assist with creating online food access map, and food system report card indicator project.
- Promote community revitalization, economic development, and sustainability through research, presentations, developing recommended policies and programs, and by facilitating planning processes, including organizing interactive visioning activities, facilitating educational forums, conducting community outreach and input processes, developing implementation strategies, and writing plans.
- Carry out community planning and other program-related projects, in areas such as food equity, and brownfields redevelopment, including three Brownfield Opportunity Area projects. Work with teams consisting of agency staff, consultants, and municipal employees. Develop and execute workplans and budgets for contract and grant-funded work, including CDBG; write proposals; prepare grant reports.
- Develop and facilitate planning processes including educational forums, charrette-like workshops, and goal setting and write plans containing goals, objectives and strategies for achieving stated goals related to economic development, environmental quality, land use, and transportation.
- Supervise eight interns and activities performed by other professional staff: coordinating intern schedules and activities, developing learning objectives, projects, and workplans.
- Serve as liaison to numerous community partner groups: work directly with more than four community organizations to provide technical assistance on carrying out neighborhood improvement, sustainability, and economic development strategies and help strengthen capacity for implementing plans and projects.
- Conduct quantitative and qualitative research, including best practices on programs, policies, and regulations; prepare memos, reports, and speaking points. Present at meetings and events and coordinate workshops, panels and presentations for various regional and national speaking engagements on topics related to sustainability, economic development, environmental health, transportation, equity and food systems planning.

Intern, *Bronx Borough President's Office, Bureau of Planning and Development*, Bronx, NY 09/2008 – 01/2009

- Served as team member on Historic Preservation Task Force: researched funding sources available to owners of historically significant property; create presentation and GIS maps of selected properties. Final report examined opportunities for preservation and designation of historic properties in the borough.

1196

Intro Res. No. -2013
Introduced by Presiding Officer, on request of the County Executive

Laid on the Table 3/5/13

RESOLUTION NO. -2013, CONFIRMING APPOINTMENT OF EXECUTIVE DIRECTOR OF THE SUFFOLK COUNTY TRAFFIC AND PARKING VIOLATIONS AGENCY (PAUL J. MARGIOTTA)

WHEREAS, Suffolk County Legislature Resolution No. 1195-2012 (Local Law 9-2013), created the Suffolk County Traffic And Parking Violations Agency (TPVA); and

WHEREAS, the Executive Director of TPVA is appointed by the County Executive of Suffolk County to head TPVA under Local Law 9-2013; and

WHEREAS, Steve Bellone, the County Executive of Suffolk County, after due consideration, has appointed Paul J. Margiotta, currently residing in Bay Shore, New York, as Executive Director of TPVA; now, therefore be it

1st RESOLVED, that the appointment of Paul J. Margiotta, currently residing in Bay Shore, New York, as Executive Director of TPVA to serve at the pleasure of the County Executive of Suffolk County is hereby approved, effective immediately; and be it further

2nd RESOLVED, that this Legislature being the State Environmental Quality Review Act (SEQRA) lead agency, hereby finds and determines that this resolution constitutes a Type II action pursuant to Section 617.5(c)(20) and/or (27) of Title 6 of the NEW YORK CODE OF RULES AND REGULATIONS (6 NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection, and the Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination of non-applicability or non-significance in accordance with this resolution.

DATED: _____

APPROVED BY:

County Executive of Suffolk County

Date: _____

EDUCATION

Touro Law School Central Islip, New York
Juris Doctor, May 2002 , Cum Laude

Dowling College Sayville, New York
Masters of Business Administration, December 2001, Magna Cum Laude

New York Institute of Technology Old Westbury, New York
Bachelor of Science, May 1990

EMPLOYMENT

Suffolk County New York----January 2012-Present Hauppauge, New York
Chief Deputy County Attorney
Director of Labor Relations

Town of Babylon----January 2007 – December 2011 Lindenhurst, New York
Town Attorney, January 2007 – December 2011
Deputy Town Attorney, 2004 - 2007
Special Prosecutor, 2003 – 2007
Special Assistant District Attorney, 2003-2007

The Margiotta Law Firm, P.C.----May 2004-Present Bay Shore, New York
Private Practice,

Nassau County Courts ---- November 1992 - December 2002 Mineola, New York
NYS Senior Court Officer,
Union President, May 2000 - December 2002

LEGAL SKILLS

- Trials – Bench and Jury, Civil and Criminal
- Appeals – State and Federal
- Drafting – Briefs, Motions, Pleadings, Resolutions, Contracts, Statutes
- Oral Arguments – State and Federal
- Management – Legal and Support Staff
- Fiscal – Budgeting, Cost Cutting, Analyzing
- Municipal Law
- Labor and Employment Law

ADMISSIONS

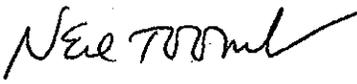
- New York State Courts
- US District Court – Eastern District
- US Court of Appeals – 2nd Circuit

OTHER EXPERIENCE/SKILLS

- Upon Request.

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STATEMENT OF FINANCIAL IMPACT
OF PROPOSED SUFFOLK COUNTY LEGISLATION

1. Type of Legislation Resolution <u>X</u> Local Law _____ Charter Law _____		
2. Title of Proposed Legislation RESOLUTION NO. -2013 CONFIRMING APPOINTMENT OF EXECUTIVE DIRECTOR OF THE SUFFOLK COUNTY TRAFFIC AND PARKING VIOLATIONS AGENCY (PAUL J. MARGIOTTA)		
3. Purpose of Proposed Legislation SAME AS ABOVE		
4. Will the Proposed Legislation Have a Fiscal Impact? Yes _____ No <u>X</u>		
5. If the answer to item 4 is "yes", on what will it impact? (circle appropriate category)		
County	Town	Economic Impact
Village	School District	Other (Specify):
Library District	Fire District	
6. If the answer to item 4 is "yes", Provide Detailed Explanation of Impact		
7. Total Financial Cost of Funding over 5 Years on Each Affected Political or Other Subdivision. none		
8. Proposed Source of Funding 2013 OPERATING BUDGET		
9. Timing of Impact -		
10. Typed Name & Title of Preparer Neil Toomb Intergovernmental Relations Coordinator	11. Signature of Preparer 	12. Date: 3/5/13

11910

FINANCIAL IMPACT
2013 PROPERTY TAX LEVY
COST TO THE AVERAGE TAXPAYER

GENERAL FUND

	2013 PROPERTY TAX LEVY	2013 COST TO AVG TAXPAYER	2013 AV TAX RATE PER \$100	2013 FEV TAX RATE PER \$1000
TOTAL	\$0	\$0.00		\$0.000

POLICE DISTRICT AND DISTRICT COURT

	2013 PROPERTY TAX LEVY	2013 COST TO AVG TAXPAYER	2013 AV TAX RATE PER \$100	2013 FEV TAX RATE PER \$1000
TOTAL	\$0	\$0.00		\$0.000

COMBINED

	2013 PROPERTY TAX LEVY	2013 COST TO AVG TAXPAYER	2013 AV TAX RATE PER \$100	2013 FEV TAX RATE PER \$1000
TOTAL	\$0	\$0.00		\$0.000

NOTES:

- 1) SOURCE FOR NUMBER OF FAMILY PARCELS AND CORRESPONDING ASSESSED VALUATION: SUFFOLK COUNTY REAL PROPERTY, SEPTEMBER 2011.
- 2) SOURCE FOR TOTAL TAXABLE ASSESSED VALUATION FOR COUNTY PURPOSES: SCHEDULE A, REPORT OF ASSESSED VALUATION FOR 2011-2012.
- 3) SOURCE FOR EQUALIZATION RATES: TENTATIVE 2011 COUNTY EQUALIZATION RATES ESTABLISHED BY THE NEW YORK STATE BOARD OF EQUALIZATION AND ASSESSMENTS.

1197

Intro. Res. No. -2013
Introduced by Legislator Schneiderman

Laid on Table 3/5/13

**RESOLUTION NO. -2013, ADOPTING LOCAL LAW
NO. -2013, A CHARTER LAW TO PROVIDE FOR FAIR
AND EQUITABLE DISTRIBUTION OF PUBLIC SAFETY SALES
AND COMPENSATING USE TAX REVENUES**

WHEREAS, there was duly presented and introduced to this County Legislature at a regular meeting held on , 2013, a proposed local law entitled, "**A CHARTER LAW TO PROVIDE FOR FAIR AND EQUITABLE DISTRIBUTION OF PUBLIC SAFETY SALES AND COMPENSATING USE TAX REVENUES**;" and said local law in final form is the same as when presented and introduced; now, therefore be it

RESOLVED, that said local law be enacted in form as follows:

LOCAL LAW NO. -2013, SUFFOLK COUNTY, NEW YORK

**A CHARTER LAW TO PROVIDE FOR FAIR AND EQUITABLE
DISTRIBUTION OF PUBLIC SAFETY SALES AND
COMPENSATING USE TAX REVENUES**

**BE IT ENACTED BY THE COUNTY LEGISLATURE OF THE COUNTY OF
SUFFOLK**, as follows:

Section 1. Legislative Intent.

This Legislature hereby finds and determines that the County of Suffolk is authorized to allocate between one-eighth and three-eighths of the revenue generated from the County's additional 1% sales and compensating use tax for public safety purposes.

This Legislature also finds that because sales taxes are collected from all over Suffolk County, sales tax revenue generated for public safety purposes should be allocated equitably between the Suffolk County Police District and those towns and villages that maintain their own police forces.

This Legislature determines that Local Law No. 18-1998 attempted to establish an equitable formula for distributing public safety sales tax revenues but, unfortunately, the formula was confusing and compliance with the law has been uneven, at best.

This Legislature also determines that it is necessary to update and clarify the County's formula for allocating public safety sales tax revenues.

This Legislature also determines that in order to assure adequate funding for public safety, at least one-quarter of the revenues generated by the County's additional 1% sales and compensating use tax should be dedicated to police services on an annual basis.

Therefore, the purpose of this law is to amend the Suffolk County Charter to require that at least one-quarter of the revenues generated by the County's additional 1% sales and compensating use tax be dedicated to police services and to establish a fair, population-based formula that will ensure that public safety sales tax revenues are shared equitably between the Suffolk County Police District and the towns and villages lying outside the district.

Section 2. Amendments.

I. Section C4-6(J) of the SUFFOLK COUNTY CHARTER is hereby amended to read as follows:

* * * *

§ C4-6. Submission of proposed County budget by County Executive.

* * * *

J. The proposed expense budget for any fiscal year shall allocate, as authorized by §1262-j of NEW YORK TAX LAW, no less than one-fourth of the revenues generated by the County's additional 1% sales and compensating use tax to the Suffolk County Police District to support the operations of the Suffolk County Police Department and to make special payments to the following municipalities to support their police services: Towns of Riverhead, Southampton, Shelter Island, Southold and East Hampton and the Villages of Amityville, Ocean Beach, Saltaire, Head of Harbor, Nissequogue, Asharoken, Huntington Bay, Lloyd Harbor, Northport, Westhampton Beach, Quogue, Sag Harbor, Southampton, and East Hampton. The special payments shall be computed by multiplying the amount of sales tax revenue allocated to the Police District Fund by a fraction equal to the total population residing within the aforesaid municipalities divided by the total population of the County. This amount shall then be divided among the municipalities based upon the respective percentage that the population of each municipality bears to all others as determined by the most recent published federal census.

* * * *

II. Section C4-10 of the SUFFOLK COUNTY CODE is hereby amended to include a new subsection (k) to read as follows:

C4-10. Action by County Legislature on proposed budget.

* * * *

K. The adopted expense budget for any fiscal year shall allocate, as authorized by §1262-j of NEW YORK TAX LAW, no less than one-fourth of the revenues generated by the County's additional 1% sales and compensating use tax to the Suffolk County Police District to support the operations of the Suffolk County Police Department and to make special payments to the following municipalities to support their police services: Towns of Riverhead, Southampton, Shelter Island, Southold and East Hampton and the Villages of Amityville, Ocean Beach, Saltaire, Head of Harbor, Nissequogue, Asharoken, Huntington Bay, Lloyd Harbor, Northport, Westhampton Beach, Quogue, Sag Harbor, Southampton, and East Hampton. The special payments shall be computed by multiplying the amount of sales tax revenue allocated to the Police District Fund by a fraction equal to the total population residing within the aforesaid municipalities divided by the total population of the County. This amount shall then be divided among the municipalities based upon the respective percentage that the population of each municipality bears to all others as determined by the most recent published federal census.

Section 3. Applicability.

This law shall apply to expense budgets proposed and adopted on or after the effective date of the law.

Section 4. Severability.

If any clause, sentence, paragraph, subdivision, section, or part of this law or the application thereof to any person, individual, corporation, firm, partnership, entity, or circumstance shall be adjudged by any court of competent jurisdiction to be invalid or unconstitutional, such order or judgment shall not affect, impair, or invalidate the remainder thereof, but shall be confined in its operation to the clause, sentence, paragraph, subdivision, section, or part of this law, or in its application to the person, individual, corporation, firm, partnership, entity, or circumstance directly involved in the controversy in which such order or judgment shall be rendered.

Section 5. SEQRA Determination.

This Legislature, being the State Environmental Quality Review Act (SEQRA) lead agency, hereby finds and determines that this law constitutes a Type II action pursuant to Section 617.5(c)(20) of Title 6 of the NEW YORK CODE OF RULES AND REGULATIONS (6 NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection. The Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination of non-applicability or non-significance in accordance with this law.

Section 6. Effective Date.

This law shall not take effect until at least sixty (60) days after its adoption, nor until approved by the affirmative vote of a majority of the qualified electors of the County of Suffolk voting on a proposition for its approval if within sixty (60) days after its adoption there is filed with the Clerk of the County Legislature a petition protesting against this law in conformity with the provisions of Section 34(4) of the NEW YORK MUNICIPAL HOME RULE LAW and upon filing in the office of the Secretary of State.

DATED:

APPROVED BY:

County Executive of Suffolk County

Date:

OFFICE OF THE COUNTY LEGISLATURE

COUNTY OF SUFFOLK

GEORGE NOLAN
COUNSEL TO THE LEGISLATURE
email: george.nolan@suffolkcountyny.gov



WILLIAM H. ROGERS BUILDING
P.O. Box 6100
HAUPPAUGE, NY 11788-0099
(631) 853-5494 (PHONE)
(631) 853-4415 (FAX)

DATE: MARCH 4, 2013
TO: CLERK OF THE COUNTY LEGISLATURE
RE: MEMORANDUM OF COUNSEL TO THE LEGISLATURE PURSUANT TO RULE 28

PROPOSED LOCAL LAW YEAR 2013

TITLE: I.R. NO. -2013; A CHARTER LAW TO PROVIDE FOR FAIR AND EQUITABLE DISTRIBUTION OF PUBLIC SAFETY SALES AND COMPENSATING USE TAX REVENUES

SPONSOR: LEGISLATOR SCHNEIDERMAN

DATE OF RECEIPT BY COUNSEL: 3/4/13 PUBLIC HEARING: 3/19/13

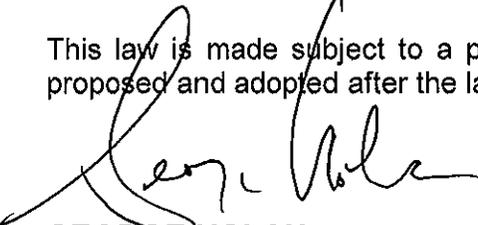
DATE ADOPTED/NOT ADOPTED: _____ CERTIFIED COPY RECEIVED: _____

This proposed law would amend and clarify the County's charter provisions relating to the allocation of public safety revenues generated by the County's additional 1% sales tax for public safety purposes.¹

Specifically, this law would require:

- 1) that no less than one-fourth of the revenues generated by the County's additional 1% sales tax go to support the operations of the Suffolk County Police Department and to make special payments to the towns and villages outside the Police District to support their police services; and
- 2) that the towns and villages located outside the Suffolk County Police District receive a proportionate share of the public safety sales tax revenues, based on population.² The County Executive would be required to propose, and the Legislature would be required to adopt, an operating budget that provides for such payments.

This law is made subject to a permissive referendum and would apply to operating budgets proposed and adopted after the law takes effect.



GEORGE NOLAN
Counsel to the Legislature

¹ Section 1262-j of NEW YORK TAX LAW authorizes the County to use between one-eighth and three-eighths of the revenue generated by the additional 1% sales and compensating use tax for public safety purposes.

² The payments to towns and villages will be calculated by multiplying the amount of sales tax revenues allocated to the Police District by a fraction equal to the population residing within these municipalities divided by the total population of Suffolk County. This amount will then be divided among the towns and villages based upon their respective populations.

1198

Intro. Res. No. -2013
Introduced by Legislator Hahn

Laid on Table 3/5/13

**RESOLUTION NO. -2013, ESTABLISHING ACTIVE
SHOOTER PROTOCOLS FOR STAFF AT ALL COUNTY
FACILITIES**

WHEREAS, the County owns and leases many buildings, each unique in structure, layout and function; and

WHEREAS, the mass murder tragedies at Sandy Hook, Virginia Tech and at other locations around our country demonstrate that the County needs to develop plans to protect employees and citizens in the event a shooter enters a building; and

WHEREAS, the County should have a plan in place at each of its buildings to protect employees to the greatest fullest extent possible should a gunman enter their workplace; and

WHEREAS, each County department should work with the Suffolk County Police Department to develop an active shooter protocol tailored to the needs of each facility; now, therefore be it

1st RESOLVED, that the Department of Public Works is hereby authorized, empowered and directed to work cooperatively with the Suffolk County Police Department and each County department and agency to establish safety protocols for employees in the event an active shooter enters a County building; and be it further

2nd RESOLVED, that these safety protocols shall be tailored for each County facility to ensure the optimum protection for County employees; and be it further

3rd RESOLVED, that all County departments and agencies shall have active shooter safety protocols in place at every County facility within 180 days of the effective date of this resolution; and be it further

4th RESOLVED, that this Legislature, being the State Environmental Quality Review Act (SEQRA) lead agency, hereby finds and determines that this resolution constitutes a Type II action pursuant to Section 617.5(c)(20), (21) and (27) of Title 6 of the NEW YORK CODE OF RULES AND REGULATIONS (6 NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection, and the Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination of non-applicability or non-significance in accordance with this resolution.

DATED:

APPROVED BY:

County Executive of Suffolk County

Date:

s:\res\r-establish-active-shooter-protocols

1199
Intro. Res. No. -2013
Introduced by Legislator Gregory

Laid on Table 3/5/13

**RESOLUTION NO. -2013, DIRECTING THE DIVISION OF
TRANSPORTATION, DEPARTMENT OF PUBLIC WORKS TO
STUDY THE FEASIBILITY OF PLACING COUNTY PUBLIC
TRANSIT ROUTES ON SEARCH ENGINES**

WHEREAS, the County of Suffolk operates public transit to allow for affordable travel throughout the County; and

WHEREAS, many online mapping systems, such as MapQuest and Google Maps, are incorporating public transit routes as a means of travel when making a trip; and

WHEREAS, Nassau County has made its public transportation route information and schedules available to these websites, but Suffolk County has not; and

WHEREAS, the Division of Transportation in the Department of Public Works should examine the feasibility of working with online search engines and mapping sites to make its public transit schedules more readily available to the public; now, therefore be it

1st RESOLVED, that the Division of Transportation in the Department of Public Works is hereby authorized, empowered and directed to examine the feasibility of making public transportation information available to online search engines and mapping websites to aid those seeking to use public transportation in Suffolk County; and be it further

2nd RESOLVED, that the feasibility study shall determine the information required to be provided to online search engines and mapping websites, as well as any costs or contractual agreements associated with doing so; and be it further

3rd RESOLVED, that the Division of Transportation shall provide a written report to the County Executive, each County Legislator and the Clerk of the Legislature, stating its findings and determinations, as well as recommendations for action, within forty five (45) days of the effective date of this resolution; and be it further

4th RESOLVED, that this Legislature, being the State Environmental Quality Review Act (SEQRA) lead agency, hereby finds and determines that this resolution constitutes a Type II action pursuant to Section 617.5(c)(20), (21) and (27) of Title 6 of the NEW YORK CODE OF RULES AND REGULATIONS (6 NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection, and the Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination of non-applicability or non-significance in accordance with this resolution.

DATED:

APPROVED BY:

County Executive of Suffolk County

Date:

s:\res\r-transit info search engines

Introduced by Presiding Officer, on request of the County Executive

**RESOLUTION NO. ____-2013, AUTHORIZING FUNDING OF
INFRASTRUCTURE IMPROVEMENTS AND OVERSIGHT OF
REAL PROPERTY UNDER THE SUFFOLK COUNTY AFFORDABLE
HOUSING OPPORTUNITIES PROGRAM AND EXECUTION OF
AGREEMENTS (WYANDANCH RISING)**

WHEREAS, Local Law No. 13-2000 as amended in its entirety by Local Law No. 17-2004, known as Suffolk County Administrative Code ("SCAC") Article XXXVI, as amended, found and determined that there was a need for the County to provide assistance in creating affordable housing and established the Suffolk County Affordable Housing Opportunities Program; and

WHEREAS, SCAC § A-36-2(D) provides a statutory framework for land to be acquired and infrastructure improvements to be made by Suffolk County's Workforce Housing Program through the use of capital bond proceeds; and

WHEREAS, the Suffolk County Department of Economic Development and Planning and the Town of Babylon have identified a site in the County of Suffolk which would be appropriate for development as affordable housing and is identified by Suffolk County Tax Map Numbers: p/o 0100-040.00-02.00-010.003; p/o 0100-040.00-02.00-010.004 and p/o 0100-040.00-02.00-012.000 (the "Subject Premises"); and

WHEREAS, the affordable housing development contemplates the construction of 60 affordable rental units all as more particularly described in the Development Plan attached hereto as Schedule A (the "Development Plan"), as part of a broader redevelopment project known as Wyandanch Rising; and

WHEREAS, the Subject Premises will require infrastructure improvements to facilitate the construction of the affordable housing development and, in connection therewith, the Town of Babylon and the Albanese Organization, as developer of the Subject Premises, have requested infrastructure funding from the County in the amount of up to One Million Seven Hundred Twenty Three Thousand Eight Hundred (\$1,723,800.00) Dollars; and

WHEREAS, the Town of Babylon, the developer and the County are negotiating a development agreement to be executed by the Town, the developer and the County (the "Development Agreement") which will incorporate the provisions of the Development Plan and which will set forth the funding requirements of certain infrastructure improvements to the Subject Premises and the subsequent development of the 60 affordable rental units; and

WHEREAS, pursuant to Resolution 347-2009, the Town Board of the Town of Babylon, as lead agency, issued a SEQRA negative declaration which completed the environmental review; and further the negative declaration issued by the Town Board of the Town of Babylon is binding on the County, as an involved agency, pursuant to Title 6 of the New York Codes, Rules and Regulations (NYCRR) § 617.6 (b) (3) (iii) and, therefore, SEQRA is complete; and

WHEREAS, Resolution Nos. 1192-2009 appropriated the proceeds of \$5,000,000 in Suffolk County Serial Bonds to fund the infrastructure improvements in connection with the properties acquired, funded, constructed, reconstructed or rehabilitated in connection with the Affordable Housing Opportunities Program subject to further Legislative approval of a resolution authorizing the funding of specific infrastructure improvements to be made in connection with such affordable housing developments; now, therefore be it

1st **RESOLVED**, that the Suffolk County Legislature, on behalf of the County, hereby finds and determines that the development of this affordable housing project meets the requirements of the Suffolk County Affordable Housing Opportunities Program and the need to fill the critical shortage of affordable housing in the County and, accordingly, authorizes the development of this affordable housing project and the requested funding thereof in the amount of up to One Million Seven Hundred Twenty Three Thousand Eight Hundred (\$1,723,800.00) Dollars for infrastructure improvements in accordance with the Development Plan; and be it further

2nd **RESOLVED**, that the County Executive, the Department of Economic Development and Planning, its Commissioner, its Director of Real Estate and the County Attorney are authorized, empowered and directed to negotiate, execute and deliver a Development Agreement (the "Development Agreement") which incorporates the provisions of the Development Plan substantially in the form presented herewith, with such changes thereto and such other terms and provisions which are necessary or desirable to effectuate this overall affordable housing project and transaction, and to pay such additional expenses in connection therewith which shall include, but not be limited to, the cost of surveys, appraisals, environmental audits, title reports and insurance, as may be necessary and appropriate to accomplish the authorizations and duties referred to herein; and be it further

3rd **RESOLVED**, that, subject to the terms of a fully executed Development Agreement, the County Comptroller and County Treasurer are hereby authorized to reserve and pay up to One Million Seven Hundred Twenty Three Thousand Eight Hundred (\$1,723,800.00) Dollars in connection with infrastructure costs associated with

the within development from previously appropriated funds in Capital Project No. 525-CAP-6411.312; and be it further

4th **RESOLVED**, that the County Executive, the County Attorney, the Commissioner of the Department of Economic Development and Planning and the Director of Real Estate are hereby authorized, respectively, to take such further actions as may be necessary or desirable to effectuate the purposes and intent of the foregoing resolutions and to execute any and all documents necessary and/or desirable to effectuate the purpose and intent of the affordable housing development referred to in this Resolution; and be it further

5th **RESOLVED**, pursuant to its Resolution 347-2009, the Town Board of the Town of Babylon, as lead agency, issued a SEQRA negative declaration which completed the environmental review; and further the negative declaration issued by the Town Board of the Town of Babylon is binding on the County, as an involved agency, pursuant to Title 6 of New York Codes, Rules and Regulations (NYCRR) § 617.6 (b) (3) (iii) and, therefore, SEQRA is complete.

Dated: _____

APPROVED BY:

County Executive of Suffolk County

Date: _____

STATEMENT OF FINANCIAL IMPACT
OF PROPOSED SUFFOLK COUNTY LEGISLATION

1. Type of Legislation		
Resolution <u> X </u> Local Law _____ Charter Law _____		
2. Title of Proposed Legislation Resolution Authorizing Funding of Infrastructure Improvements and Oversight of Real Property under the Suffolk County Affordable Housing Opportunities Program and Execution of Agreements (Wyandanch Rising)		
3. Purpose of Proposed Legislation Authorizing funding of infrastructure improvements, in an amount up to \$1,723,800, and oversight of real property under the Suffolk County Affordable Housing Opportunities Program and execution of agreements in connection with the development of Wyandanch Rising		
4. Will the Proposed Legislation Have a Fiscal Impact? Yes _____ No _____		
5. If the answer to item 4 is "yes", on what will it impact? (circle appropriate category)		
County	Town	Economic Impact
Village	School District	Other (Specify):
Library District	Fire District	
6. If the answer to item 5 is "yes", Provide Detailed Explanation of Impact		
7. Total Financial Cost of Funding over 5 Years on Each Affected Political or Other Subdivision.		
8. Proposed Source of Funding		
9. Timing of Impact		
10. Typed Name & Title of Preparer	11. Signature of Preparer	12. Date

SCIN FORM 175b (10/95)

SCHEDULE A to FUNDING RESOLUTION
WYANDANCH RISING PHASE I (Building A) DEVELOPMENT PLAN

ITEM	DESCRIPTION	EXHIBIT
MUNICIPALITY:	Town of Babylon.	
PROJECT ADDRESS:	<p>The project involves parcels in the hamlet of Wyandanch located at the intersection of Straight Path and [New Street to Be Named], Wyandanch, NY. The development area consists parcels as follows: SCTM# 0100-040.00-02.00-part of existing lots 10.3; 10.4; 12 (See attached Tax Map)</p>	A
SITE DESCRIPTION:	<p>The entire site is comprised of approx. 2.423 acres. (See attached Legal Description).</p> <p>The property is zoned Wyandanch Form Base Code. No further zone change is required. Subdivision and overlay have been approved by the Town. To be reviewed by the Suffolk County Planning Commission on March 5, 2013.</p>	B
OWNER/DEVELOPER:	<p>Master Developer: WR Communities LLC</p> <p>Applicant/Beneficial Owner & Developer: WR Communities A LLC</p> <p>Fee Owner, as nominee: WRI (TOB entity)</p> <p>See attached organizational chart</p>	C
SUFFOLK COUNTY TAX MAP NUMBERS:	District 0100, Section 040.00, Block 02.00-part of existing lots 10.3, 10.4 and 12. The subject is part of a subdivision the map for which has been submitted to Suffolk County by the Town of Babylon for formal adaption.	
LAND PURCHASE:	The land is being transferred from the Town of Babylon to a Town controlled entity (Wyandanch Rising Inc. or WRI) which will be the fee owner until the improvements are completed at which time fee title will pass from WRI to WR Communities A LLC, the applicant and beneficial owner. The land is being purchased by WR Communities A LLC from WRI	
INFRASTRUCTURE FUNDS:	Suffolk County will subsidize up to \$1,723,800 of the infrastructure costs associated with this development. The funds will be utilized to offset the costs of infrastructure improvements, including but not limited to, site prep., residential parking, curbs, sidewalks, lighting, drainage and landscaping. The owner/developer will finance the	

	infrastructure funds and the funds shall only be paid upon completion of the project.	
PROJECT DESCRIPTION:	<p>The project is a 5-story mixed-use development with 91 units of rental residences on four floors, above a floor of retail and residential common areas. The rental units present a mix of one-bedroom, two-bedroom and three-bedroom units targeted for a mix of incomes.</p> <p>60 of the units will be affordable/ income restricted.</p> <p>Attached is a summary description of the building including a table of the mix of unit type.</p> <p>This is the first development in the Wyandanch Rising Project and will be followed by a second mixed-use building. Subsequent phases are planned to include commercial office, retail and residential buildings, both owner-occupied and rental.</p>	D
SUFFOLK COUNTY INFRASTRUCTURE DEVELOPMENT SUBSIDY (IDS):	<p>Up to \$1,723,800/60 affordable units (\$28,730 per unit)</p> <p>The IDS shall be evidenced by a deferred note and lien. The note shall be non-interest bearing unless and until there is an event of default at which time interest shall accrue at 6%. The note and lien may be subordinated to bank financing or other funding sources as reasonably acceptable to the County.</p>	
IDS REPAYMENT:	Repayable after 30 years or upon covenant violation. Units shall remain affordable for the term of the IDS	
HOMEOWNER UNIT PURCHASE PRICES:	N/A	
HOMEOWNERSHIP OCCUPANCY REQUIREMENT:	N/A	

<p>INCOME ELIGIBILITY:</p>	<p>60 of the units will be affordable to households earning up to 90% HUD AMI. Tenants shall not pay more than 30% of their income for rent.</p> <p>Rents are based on 2013 projections. Rents cannot exceed the fair market rents established by HUD.</p> <p>Covenants & Restrictions shall be recorded evidencing same.</p> <p>See attached Rental Spreadsheet (with rents per unit type).</p>	<p>E</p>
<p>RENTER SELECTION PROCESS/MARKETING PLAN:</p>	<p>The Long Island Housing Partnership will be retained to market the development and to perform the applicant qualification process in accordance with County requirements and the Fair Housing Laws. The developer has provided the County with a copy of its Renter Selection Process and Marketing Plan.</p>	
<p>ANTICIPATED FUNDING SOURCES/FINANCIAL ASSISTANCE:</p>	<p>Suffolk County Infrastructure Funds: up to \$1,723,800</p> <p>NYS Homes and Community Renewal: Federal Low Income Housing Tax Credits: \$2,503,280</p> <p>NYS HCR State Low Income Housing Tax Credits (SLIHC) \$900,000</p> <p>Deferred Developer's Fee \$2,440,000</p> <p>Developer Cash equity \$1,500,000</p> <p>Capital One Bank Construction Loan \$29,318,100</p> <p>These are the sources during construction. Please see the attached Sources & Uses summary for a summary of Permanent Sources.</p>	<p>F</p>

PERMITTED ENCUMBRANCES:	<p>A subordinated lien in favor of Suffolk County in the amount of the IDS to be repaid upon such terms as may be reasonably acceptable to the County and as shall be contained in a Mortgage and/or Easement to be executed between the parties.</p> <p>A lien in favor of Capital One Bank as permanent mortgagee</p>	
DEVELOPMENT TEAM MEMBERS:	<p>Developer: WR Communities A LLC Developer Manager: Albanese Development Corp Property Manager: American Realty & Management Builder: A-3 Construction LLC (a subsidiary of Albanese Organization) Attorney: Steve Weiss Cannon Heyman & Weiss, LLP Engineer: Cameron Engineering</p>	
CONDITIONS OF CONTRACT EXECUTION/FUNDING/CLOSING:	<ol style="list-style-type: none"> 1. Satisfactory evidence of financing sources 2. Building permits and completion of construction, certificate of occupancy 3. Payment and Performance Bond naming Suffolk County as insured 4. Suffolk County and municipal approvals, as applicable, including Health Department 5. Execution of a Development Agreement by and among the Developer (beneficial owner), the Town of Babylon, the fee owner and such other parties as the County may reasonably determine and such other documents in connection therewith as the County may reasonably require. Town Board resolutions required. <hr/> <ol style="list-style-type: none"> 6. Title to the premises shall have been transferred to the beneficial owner 7. Completion of SEQRA 8. Environmental review satisfactory to the County 9. Such other conditions as the County may reasonably require and as shall be set forth in the Development Agreement. 	

EXHIBIT B
TO
DEVELOPMENT PLAN



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& Son, LLP
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Mineola, NY 11501
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Description of Lot 6

On Proposed Map of Wyandanch Transit Oriented Development

Situate Wyandanch, New York

Suffolk County Real Property Tax Parcel

District: 100

Section: 40

Block: 2

Part of Lots: 10.3, 10.4, 12

Beginning at a point on the southeast line of Straight Path at the northwest corner of the described property, said corner being more particularly described as:

Commencing at the intersection of the southeasterly line of Straight Path with the westerly line of 9th Street;

Running thence along the southeasterly line of Straight Path, South 21°16'15" West 1,159.35 feet, to the POINT OF BEGINNING.

RUNNING THENCE South 68°43'20" East 59.98 feet;

Thence North 21°16'15" East 182.70 feet;

Thence South 68°43'45" East 206.00 feet;

Thence South 16°47'31" East 114.84 feet;

Thence South 21°16'40" West 92.31 feet;

Thence South 68°43'20" East 64.80 feet, to the northwesterly line of Avenue A as shown on the proposed Map of Wyandanch Transit Oriented Development;

Thence along the northwesterly line of Avenue A, South 21°16'40" West 144.90 feet, to the northeasterly line of Acorn Plaza as shown on the proposed Map of Wyandanch Transit Oriented Development;

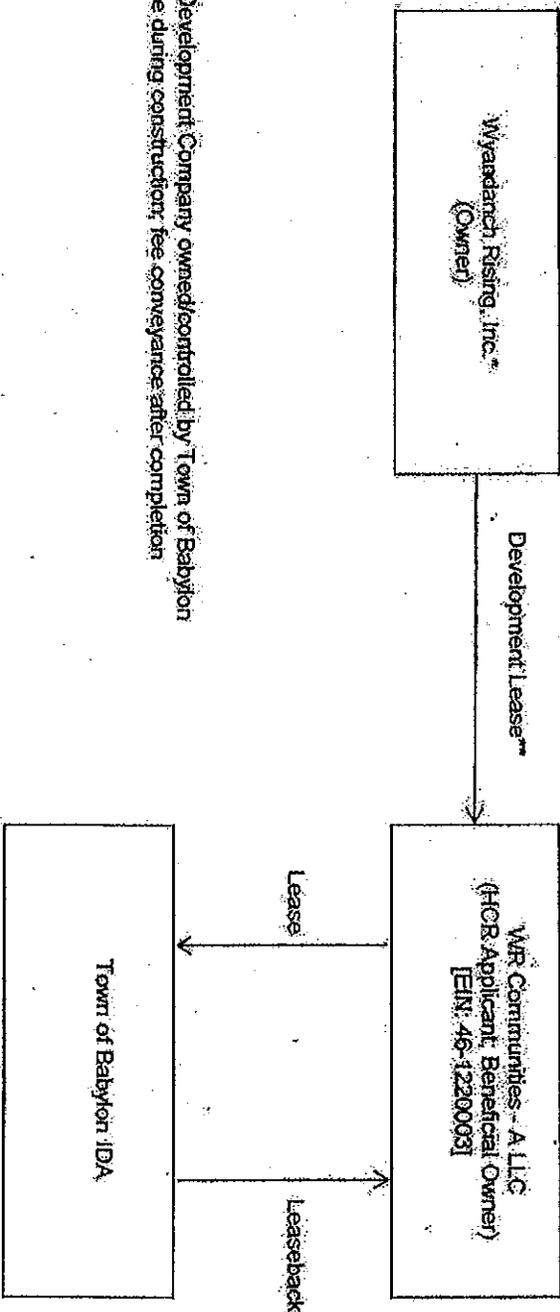
Thence along the northeasterly line of Acorn Plaza, North 68°43'20" West 401.57, to the southeasterly line of Straight Path;

Thence along the southeasterly line of Straight Path, North 21°16'15" East 144.90 feet, to the POINT OF BEGINNING.

Containing within said bounds 105,563 Square Feet (2.423 Acres)

EXHIBIT C
TO
DEVELOPMENT PLAN

WYANDANCH RISING - BUILDING A
REAL ESTATE STRUCTURE



Local Development Company owned/controlled by Town of Babylon
in place during construction; fee conveyance after completion

Site Plan
Exhibit C

EXHIBIT D
TO
DEVELOPMENT PLAN

Wyandanch Rising - Building A
Project Summary

Building A is the first of two mixed-use rental buildings being constructed to the north and south of the new Transit Park and Plaza that the Town of Babylon is developing.

The building is 5-stories. Four floors of metal-stud load bearing structure over a concrete and structural steel podium. The ground floor will contain 17,500 square feet of neighborhood and commuter oriented service retail, with +/- 5,000 square feet of residential service and common areas. Total building area is 122,400 gsf.

The top four floors will provide 91 rental units:

35 one-bedroom
48 two-bedroom
8 three-bedroom

A later exhibit provides information on unit sizes, income targets and anticipated rents.

The building is part of the Transit Oriented Development (TOD) that comprises Phase I of the Wyandanch Rising revitalization project. In keeping with the sustainable character, the building is being designed to LEED Silver standards.

Attachments:

First Floor Plan
Building Rendering

EXHIBIT E
TO
DEVELOPMENT PLAN

**Wyandanch Rising - Building A
Income Tiers, Unit Distribution and Anticipated Rents**

50% AMI	# In AMI Tier	Monthly Rent	Average S/F
One Bedroom	7	\$955	649
Two Bedroom	10	\$1,147	949
Three bedroom	1	\$1,327	1149
Total 50% AMI	18		

60% AMI	# In AMI Tier	Monthly Rent	Average S/F
One Bedroom	12	\$1,154	665
Two Bedroom	18	\$1,386	949
Three bedroom	3	\$1,603	1149
Total 50% - 60% AMI	33		

Workforce <90% AMI	# In AMI Tier	Monthly Rent	Average S/F
One Bedroom	4	\$1,365	724
Two Bedroom	4	\$1,625	949
Three bedroom	1	\$1,950	1149
Total Workforce	9		

Unrestricted Income	# In AMI Tier	Monthly Rent	Average S/F
One Bedroom	12	\$1,510	725
Two Bedroom	15	\$1,900	950
Three bedroom	3	\$2,300	1149
Unrestricted Income	30		

EXHIBIT F
TO
DEVELOPMENT PLAN

Wyandanch Rising - Building A
SOURCES AND USES

Construction Sources

Capital One Construction Loan	\$29,318,075
Suffolk County IDS Funds	\$0
NYS HTF	\$0
Tax Credit Equity	\$2,503,280
SLHTC	\$900,000
Cash Equity	\$1,500,000
Developer's Fee	\$2,440,000
TOTAL SOURCES	<u>\$36,661,355</u>

Permanent Sources

Capital One Permanent Loan	\$13,666,155
Suffolk County IDS Funds	\$1,723,800
NYS HTF	\$2,088,000
Tax Credit Equity	\$12,516,400
State Tax Credits	\$4,500,000
Developer Cash and Def. Fee	\$2,167,000
TOTAL SOURCES	<u>\$36,661,355</u>

REQUEST FOR THE INTRODUCTION OF SUFFOLK COUNTY LEGISLATION
OFFICE OF THE COUNTY EXECUTIVE
County of Suffolk

- (1) Please limit this suggestion form to ONE proposal.
- (2) Describe in detail
- (3) Attach all pertinent backup material.

Submitting Department (Dept. Name & Location): Department of Economic Development and Planning H. Lee Dennison Bldg. - 2 nd Floor Hauppauge	Department Contact Person (Name & Phone No.): Jill Rosen-Nikoloff Director of Real Estate 853-6420
---	--

Suggestion Involves:

Technical Amendment _____

Grant Award _____

New Program _____

Contract: New _____ Rev. _____

Summary of Problem: (Explanation of why this legislation is needed.)

To authorize funding of infrastructure improvements, in an amount up to \$1,723,800, and oversight of real property under the Suffolk County Affordable Housing Opportunities Program for Wyandanch Rising and to permit execution of agreements in connection therewith

Proposed Changes in Present Statute: (Please specify section when possible.)

Intro. Res. No. 1201-13

Laid on the Table 3/5/13

Introduced by the Presiding Officer at the Request of the County Executive

RESOLUTION NO. -2013, AMENDING THE 2013 OPERATING BUDGET AND APPROPRIATING FUNDS IN CONNECTION WITH BONDING FOR A SETTLEMENT FOR A LIABILITY CASE AGAINST THE COUNTY

WHEREAS, the Ways and Means Committee has approved a settlement for a negligence action against County arising out of a vehicular accident for the amount of One Hundred Seventy Five Thousand (\$175,000) Dollars; and

WHEREAS, the above settlement is a mandated expense that must be paid by the County; and

WHEREAS, sufficient funds to satisfy lawsuits, orders, judgments and settlements are not available in the 2013 Operating Budget; and

WHEREAS, the County Legislature, by Resolution of even date herewith, has authorized the issuance of One Hundred Seventy Five Thousand (\$175,000) Dollars in Suffolk County Serial Bonds to cover the cost of the above referenced settlement; now, therefore be it

1st RESOLVED, that the settlement for the total sum of One Hundred Seventy Five Thousand (\$175,000) Dollars be bonded and paid under the authority of the Office of Risk Management, County Department of Law, in conjunction with the County Department of Audit and Control and the County Executive's Budget Office; and be it further

2nd RESOLVED, that the proceeds of One Hundred Seventy Five Thousand (\$175,000) Dollars in Suffolk County Serial Bonds be and are hereby appropriated as follows:

REVENUES:		
038-2780 Proceeds: Debt		\$175,000
 APPROPRIATIONS:		
	Miscellaneous	
	Auto Liability Insurance	
	038-MSC-1915	
	Mandated	
8505 – Settlements		\$175,000

DATED:

APPROVED BY:

County Executive of the County of Suffolk

Date of Approval:

Intro. Res. No. 1202-13

Laid on the Table 3/5/13

Introduced by the Presiding Officer at the Request of the County Executive

RESOLUTION NO. -2013, AMENDING THE 2013 OPERATING BUDGET AND APPROPRIATING FUNDS IN CONNECTION WITH BONDING FOR A SETTLEMENT FOR A LIABILITY CASE AGAINST THE COUNTY

WHEREAS, the Ways and Means Committee has approved a settlement for a negligence action against County arising out of a vehicular accident for the amount of Two Hundred Twenty Five Thousand (\$225,000) Dollars; and

WHEREAS, the above settlement is a mandated expense that must be paid by the County; and

WHEREAS, sufficient funds to satisfy lawsuits, orders, judgments and settlements are not available in the 2013 Operating Budget; and

WHEREAS, the County Legislature, by Resolution of even date herewith, has authorized the issuance of Two Hundred Twenty Five Thousand (\$225,000) Dollars in Suffolk County Serial Bonds to cover the cost of the above referenced settlement; now, therefore be it

1st RESOLVED, that the settlement for the total sum of Two Hundred Twenty Five Thousand (\$225,000) Dollars be bonded and paid under the authority of the Office of Risk Management, County Department of Law, in conjunction with the County Department of Audit and Control and the County Executive's Budget Office; and be it further

2nd RESOLVED, that the proceeds of Two Hundred Twenty Five Thousand (\$225,000) Dollars in Suffolk County Serial Bonds be and are hereby appropriated as follows:

REVENUES:		
038-2780 Proceeds: Debt		\$225,000
APPROPRIATIONS:		
	Miscellaneous	
	Auto Liability Insurance	
	038-MSC-1915	
	Mandated	
8505 - Settlements		\$225,000

DATED:

APPROVED BY:

County Executive of the County of Suffolk

Date of Approval:

Intro. Res. No. 1203-13

Laid on the Table 3/5/13

Introduced by the Presiding Officer at the Request of the County Executive

RESOLUTION NO. -2013, AMENDING THE 2013 OPERATING BUDGET AND APPROPRIATING FUNDS IN CONNECTION WITH BONDING FOR A SETTLEMENT FOR A LIABILITY CASE AGAINST THE COUNTY

WHEREAS, the Ways and Means Committee has approved a settlement for a negligence action against County for the amount of One Hundred Fifty Thousand (\$150,000) Dollars; and

WHEREAS, the above settlement is a mandated expense that must be paid by the County; and

WHEREAS, sufficient funds to satisfy lawsuits, orders, judgments and settlements are not available in the 2013 Operating Budget; and

WHEREAS, the County Legislature, by Resolution of even date herewith, has authorized the issuance of One Hundred Fifty Thousand (\$150,000) Dollars in Suffolk County Serial Bonds to cover the cost of the above referenced settlement; now, therefore be it

1st RESOLVED, that the settlement for the total sum of One Hundred Fifty Thousand (\$150,000) Dollars be bonded and paid under the authority of the Office of Risk Management, County Department of Law, in conjunction with the County Department of Audit and Control and the County Executive's Budget Office; and be it further

2nd RESOLVED, that the proceeds of One Hundred Fifty Thousand (\$150,000) Dollars in Suffolk County Serial Bonds be and are hereby appropriated as follows:

REVENUES:

038-2780 Proceeds: Debt \$150,000

APPROPRIATIONS:

Miscellaneous
General Liability Insurance
038-MSC-1914
Mandated

8505 - Settlements \$150,000

DATED:

APPROVED BY:

County Executive of the County of Suffolk

Date of Approval:

1204

Intro. Res. No. -2013
Introduced by Legislator Kennedy

Laid on Table

3/5/13

**RESOLUTION NO. -2013, AUTHORIZING USE OF
BLYDENBURGH COUNTY PARK BY NEW YORK BLOOD
CENTER FOR A HIKE FOR LIFE HIKE**

WHEREAS, the New York Blood Center, also known as Long Island Blood Services, is one of the largest blood collection and distribution organizations in the country; and

WHEREAS, the New York Blood Center would like to host a fundraising hike at Blydenburgh County Park in Hauppauge to raise awareness about the need for blood donations; and

WHEREAS, the fundraising hike to support the New York Blood Center will be held on Sunday, May 5, 2013; and

WHEREAS, the County of Suffolk shall receive consideration in the total amount of One Hundred and Forty Dollars (\$140.00), payment of which shall be guaranteed by New York Blood Services; and

WHEREAS, a Certificate of Insurance and accompanying declaration page naming Suffolk County as an additional insured will be provided by New York Blood Services; and

WHEREAS, the use of County property for a fundraising hike to support the New York Blood Services in their effort raise awareness about the need for blood donations to the residents of Suffolk County; now, therefore be it

1st RESOLVED, that the use of County-owned property, Blydenburgh County Park, in Hauppauge by New York Blood Services, in consideration of the payment of One Hundred and Forty and 00/100 Dollars (\$140.00), for the purpose of hosting a hike on Sunday, May 5, 2013, between the hours of 12:00 p.m. and 2:00 p.m. is hereby approved pursuant to Section 215(1) of the NEW YORK COUNTY LAW, subject to the receipt of a Certificate of Insurance by the County of Suffolk from the Department, and subject to such additional terms and conditions as may be required by the Risk Management and Benefits Division; and be it further

2nd RESOLVED, that before this event shall be permitted to occur, New York Blood Services must apply for and obtain a permit from the Commissioner of the Department of Parks, Recreation, and Conservation as required by Section 643-7 of the SUFFOLK COUNTY CODE; and be it further

3rd RESOLVED, that the Commissioner of the County Department of Parks, Recreation and Conservation is hereby authorized, empowered and directed, pursuant to Section 28-4(A) of the SUFFOLK COUNTY CHARTER, and the County Department of Public Works is hereby authorized, empowered and directed, under Section 8-2(W) of the SUFFOLK COUNTY CHARTER, to take such measures, either alone or in conjunction with each other, as shall be necessary and appropriate to facilitate the hosting of a fundraising hike to support New York Blood Service at Blydenburgh County Park in Hauppauge; and be it further

4th **RESOLVED**, that New York Blood Services shall also provide an entertainment promoter certificate to Suffolk County if it wishes to allow vendors at the event to sell tangible personal property other than food or drink in order to comply with the provisions of the NEW YORK TAX LAW; and be it further

5th **RESOLVED**, that this Legislature, being the lead agency under the State Environmental Quality Review Act ("SEQRA"), New York Environmental Conservation Law, Article 8, hereby finds and determines that this resolution constitutes a Type II action, pursuant to Volume 6 of New York Code of Rules and Regulations ("NYCRR") §617.5(c)(15), (20), and (27), in that the resolution concerns minor temporary uses of land having negligible or no permanent impact on the environment, routine, or continuing agency administration and management, not including new programs or major reordering of priorities, and adoption of a local legislative decision in connection with the same, and, since this is a Type II action, the County Legislature has no further responsibilities under SEQRA.

DATED:

APPROVED BY:

County Executive of Suffolk County

Date:

s:\res\r-use-blydenburgh-park-hike-for-life

Intro. Res. No. **1205-13**
Introduced by Presiding Officer, on request of the County Executive

Laid on Table 3/5/13

RESOLUTION NO. -2012, AUTHORIZING EMPOWERING AND DIRECTING THE SUFFOLK COUNTY DEPARTMENT OF ECONOMIC DEVELOPMENT AND PLANNING TO FILE A GRANT APPLICATION PURSUANT TO THE NEW YORK STATE 2012-2013 LOCAL GOVERNMENT EFFICIENCY GRANT PROGRAM TO EVALUATE WASTEWATER OPERATIONS IN SUFFOLK COUNTY

WHEREAS, The State Budget has appropriated \$4 million to the New York State Department of State for direct assistance to local government for the Local Government Efficiency Grant Program (LGE); and

WHEREAS, New York State established the LGE Grant program "to assist local leaders with identifying best practices and implementing actions to reduce municipal expenses and increase efficiencies in local service delivery..."

WHEREAS, as demonstrated by the work of the Blue Ribbon Panel on Sewer Districts, Suffolk County is committed to examining its current system of delivery of Wastewater Treatment through 22 municipal Sewer Districts; and

WHEREAS, Suffolk County is seeking economies of scale, uniformity and equity among the 22 municipal districts and would use the LGE Grant to find new opportunities for financial savings and operational efficiencies; now therefore;

RESOLVED, that the Suffolk County Department of Economic Development and Planning is hereby authorized, empowered, and directed to apply to the New York Department of State Local Efficiency Grant program in order to evaluate wastewater operations in Suffolk County; and be it further

RESOLVED, that the County of Suffolk hereby pledges and commits to provide a 10 percent match of any State grant funds obtained pursuant to this program, in an amount not to exceed five thousand dollars (\$5,000) and be it further

RESOLVED, that this Legislature, being the lead agency under the State Environmental Quality Review Act ("SEQRA"), Environmental Conservation Law Article 8, hereby finds and determines that this Project constitutes a Type II action, pursuant to Section 617.5 (C) (18), (20), (21) and (27) of Title 6 of New York Code of Rules and Regulations ("NYCRR"), in that the law authorizes information collection, including basic data collection and research, and preliminary planning processes necessary to formulate a proposal for an action, but does not commit the County to commence or approve an action. Since this law is a Type II action, the Legislature has no further responsibilities under SEQRA.

DATED:

APPROVED BY:

County Executive of Suffolk County

Date:

1206

Intro. Res. No. -2013

Laid on Table

3/5/13

Introduced by Presiding Officer, on request of the County Executive

**RESOLUTION NO. -2013, GRANTING A TEMPORARY
WAIVER OF SUFFOLK COUNTY RESIDENCY
REQUIREMENTS FOR THE EMPLOYMENT OF KATHERINE DANIEL**

WHEREAS, Katherine Daniel will be employed as an Assistant to the Commissioner in the Suffolk County Department of Labor, Licensing and Consumer Affairs; and

WHEREAS, Katherine Daniel is a resident of the borough of Brooklyn; and

WHEREAS, Katherine Daniel has a Masters Degree in City Planning, concentrating in Regional Economic Development from the University of California, Berkley; and

WHEREAS, Katherine Daniel was recruited for this position based on her many years of experience and skills in energy efficiency, workforce development and re-entry; and

WHEREAS, Suffolk County will benefit from the unique skill set of Katherine Daniel; now, therefore be it

1st RESOLVED, that pursuant to Section C6-3(B)(4)(2) of the Suffolk County Charter, Katherine Daniel, Assistant to the Commissioner in the Suffolk County Department of Labor, Licensing and Consumer Affairs, is hereby granted a temporary waiver from the residency requirements set forth in Sections C6-3(B)(2) and (3) of the SUFFOLK COUNTY CHARTER, but the waiver granted herein shall not exceed one (1) year from the commencement date of her employment; and be it further

2nd RESOLVED, this Legislature, being the State Environmental Quality Review Act (SEQRA) lead agency, hereby finds and determines that this law constitutes a Type II action pursuant to section 617(c)(20), and/or (27) of Title 6 of the NEW YORK CODE OF RULES AND REGULATIONS (6 NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection. The Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination on non-applicability or non-significance in accordance with this law.

DATED:

APPROVED BY:

County Executive of Suffolk County

COUNTY OF SUFFOLK



STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

SAMUEL CHU
COMMISSIONER
DEPARTMENT OF LABOR, LICENSING &
CONSUMER AFFAIRS
725 VETERANS MEMORIAL HIGHWAY
HAUPPAUGE, N.Y. 11788

ADDRESS CORRESPONDENCE TO:
P.O. BOX 6100
HAUPPAUGE, N.Y. 11788-0099
e-mail: sc.dol@suffolkcountyny.gov
PHONE # (631) 853-6600
www.suffolkcountyny.gov/labor

MEMORANDUM

TO: Jon Schneider, Deputy County Executive
Suffolk County Executive's Office

FROM: Samuel Chu, Commissioner *Chu*

DATE: March 1, 2013

RE: INTRODUCTORY RESOLUTION

Attached please find the following Introductory Resolution for the next Legislative meeting:

RESOLUTION NO. -2013, GRANTING A TEMPORARY WAIVER OF SUFFOLK
COUNTY RESIDENCY REQUIREMENTS FOR THE EMPLOYMENT OF KATHERINE
DANIEL.

Thank you for your assistance.

* * *

SC:gr
Attachment

cc: Dennis M. Cohen, Chief Deputy County Executive
Lisa Santeramo, Assistant Deputy County Executive
Tom Vaughn, Director of Intragovernmental Relations

Additional back-up material regarding IR 1206 will be emailed

separately due to the size of the file.

It will also be available on our website.

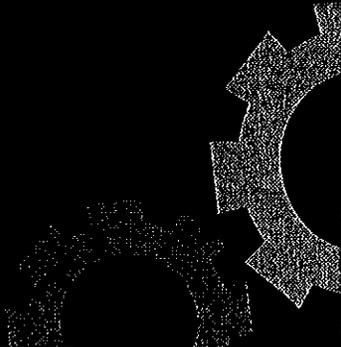


HIGH ROAD AGREEMENTS

A BEST PRACTICE BRIEF BY GREEN FOR ALL



Created by Green for All
greenforall.org/HRABrief



ACKNOWLEDGEMENTS:

Green For All would like to thank The Kresge Foundation for their generous support of this project.

Additional thanks to The Rockefeller Foundation and The William and Flora Hewlett Foundation for their support of Green For All's energy efficiency work and to the Roy A. Hunt Foundation for their support of the Toolkit for Residential Energy Efficiency Upgrade Programs referenced throughout this brief.

We would like to recognize Kat Daniel and Julie Roberts who co-authored this brief, and we would like to recognize the contributions of the following individuals and organizations: Ben Beach (Community Benefits Law Center), James Irwin (COWS), Sammy Chu (Suffolk County Department of Labor), Pam Fendt and Emmaia Gelman, (LiUNA), Jessica Goodheart (LAANE), Kelly Haines (Clean Energy Works Oregon), Anthony Ng (Center For Working Families), Andrea Petzel and Joshua Curtis (Community Power Works), Sue Andrews and Mark Wyman (NYSERDA), Will Schweiger (Long Island Green Homes), Julian Gross, Jeremy Hays, Kristina Johnson, Shamar Bibbins, Kaori Tsukada, Noé Noyola, Dan Sanchez, and Elaine Yu.

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Green For All is a national organization working to build an inclusive green economy strong enough to lift people out of poverty. Green For All is dedicated to improving the lives of all Americans through a clean energy economy. We work in collaboration with the business, government, labor, and grassroots communities to create and implement programs that increase quality jobs and opportunities in green industry – all while holding the most vulnerable people at the center of our agenda.

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I. INTRODUCTION

This brief was created by the Community of Practice program “Retrofit America’s Cities” at Green For All. The goal of this brief is to provide basic tools to agencies and organizations interested in putting High Road Agreements (HRAs) into practice.

The “Retrofit America’s Cities” Community of Practice works to identify leading programs in energy efficiency that are creating economic opportunity in their communities. We share those models widely with other industry leaders so they can replicate the best practices.

High Road Agreements can offer enormous benefits to a broad range of stakeholders and local economies. They create high-quality jobs and career pipelines that can help stabilize communities hit hard by high unemployment. They allow governments and taxpayers to amplify the impact of their program dollars. They lead to the formation of new coalitions that help increase the size and strength of the green economy. Finally, HRAs can expand the capacity of contractors, especially Historically Underutilized Businesses (HUBs), and can help to professionalize the growing home performance industry and ensure its ongoing viability.

Though High Road strategies apply to a range of sectors, this brief focuses on the use of High Road Agreements in the home energy performance industry. Our goal is to provide basic information about implementing HRAs to a variety of stakeholders, including energy efficiency program staff, local policy makers, and the non-profit and workforce development community.

In addition to laying out the framework for setting up a High Road program, this brief includes case studies describing how High Road standards have been implemented and what results they achieved. It also identifies resources for those who want to start a High Road program.

Throughout this brief, we will refer to Green For All’s Toolkit for Residential Energy Efficiency Upgrades. This toolkit is designed to make it easier to create High Road Agreements. It offers a wealth of resources, templates, and other tools shared by leading programs and members of the Retrofit America’s Cities Working Group. The toolkit can be found online at <http://www.greenforall.org/Toolkit>.

II. WHAT IS A HIGH ROAD AGREEMENT?

The term “High Road” refers to an economic development strategy for growing markets and industries that are characterized by high-quality work, high-quality jobs, and broad access to opportunity for a diversity of businesses and workers. High Road strategies result in substantial, measurable, and long-term environmental, economic and social benefits.

A **High Road Agreement (HRA)** is a multi-stakeholder agreement that lays out specific goals related to the quality and accessibility of economic opportunities associated with a particular project, investment, or initiative. The Agreement lays out strategies for advancing these goals (also known as High Road Standards), establishes a mechanism for implementing the agreement, and defines a process for evaluating progress towards goals. Agreements are often the products of a stakeholder process, commonly brokered by a local government. Key metrics typically include wages and benefits, workforce and business diversity, training and career development, and environmental benefits (such as energy saved and healthy homes).

HRAs can be applied to any project or program that aspires to create widespread economic opportunity for local businesses and workers and to ensure high-quality products and services to the public. HRAs are similar to Community Benefit Agreements, Project Labor Agreements, or Community Workforce Agreements in that stakeholders negotiate a formal agreement that adopts specific standards. High Road Agreements tend to be used—and are most appropriate—in situations where these other agreements (which are often more directly binding) are not technically or legally feasible. An example would be a project that has no single end-user, developer, or site. HRAs apply well to a decentralized residential energy efficiency program that results in thousands of contracts with thousands of homeowners. The process of developing a High Road Agreement with a wide range of stakeholders and endorsements builds a consensus that can lead to positive outcomes even if the agreement itself is more difficult to enforce legally.

Clean Energy Works Oregon (CEWO) High Roads Agreement Case Study

In 2010, the City of Portland launched Clean Energy Works Portland, a pilot program that helps residential home owners save energy, lower utility bills, improve home comfort, and reduce carbon pollution through energy efficiency upgrade packages, convenient financing, and incentives. The successful pilot expanded to become Clean Energy Works Oregon (CEWO), a non-profit organization enabling energy efficiency improvements in seven Oregon counties. As of 2012, CEWO has upgraded over 1200 single-family homes.¹

Green For All worked with the City of Portland to facilitate the process of convening stakeholders and creating a High Road Agreement that established guidelines for job training, sound labor practices, and local participation.

As a result, of the 1300 jobs CEWO aims to create, 80% will draw from local communities. The agreement requires that 30% of the contractor workforce is comprised of women, people of color, veterans, people with disabilities, low-income individuals, and / or formerly incarcerated individuals. It sets a goal to direct 20% of the contract dollars to minority and women-owned businesses (MWBs).² The HRA establishes a wage floor of 180% of the Oregon state minimum wage and requires healthcare benefits or their salary equivalents for all employees.

As of spring 2012, CEWO had worked with forty-seven local qualified contractors to produce the following outcomes: 140 direct new-hire construction jobs; over 700 workers receiving paychecks; average wages of \$21 per hour; over 87% of contractors offering employer-subsidized health insurance coverage; 57% of job hours going to women, people of color, or other historically disadvantaged workers; and 19% of contract dollars going to historically disadvantaged businesses.

In order to support contractors in meeting the High Road standards, CEWO also worked with a local job training program, Worksystems Inc., to align funding and create an incen-

¹ Haines, K. Clean Energy Works Oregon, Saving Energy and Creating Good Jobs, PowerPoint Presentation. In Good Jobs Green Jobs Conference 2012. Los Angeles.

² Clean Energy Works Oregon. High Road Standards and Benefits. 2012. Available from: <http://www.cleanenergyworksoregon.org/job-creation/>.

³ Clean Energy Works Oregon. Clean Energy Works Oregon Job Training Incentive Program, Program Overview. Available from: <http://www.cleanenergyworksoregon.org/job-creation/>.

tive for contractors to train new workers.³ Jobseekers register with Worksystems, and CEWO selects qualified training providers and contractors. CEWO and Worksystems then match entry-level graduates of training programs with contractors who agree to provide essential on-the-job experience and practical skills. As an incentive to provide training, contractors receive subsidies to supplement wages for these hires. Existing employees who want to advance their skills can also apply for continuing education scholarships through the program.

Fundamental to the success of CEWO's program is a commitment to involving all stakeholders with a focus on problem-solving rather than punishment. For example, some contractors experiencing periods of low market demand found it difficult to meet the costs of providing health insurance for employees. As a result, CEWO extended compliance timelines for this High Road standard until the demand (and the contractors' capacity) grew. CEWO also worked with contractors to procure health care as a group, letting them negotiate a better price.

CEWO is one of the leading home performance programs in the country. While some other programs have struggled to get traction, CEWO's High Road model has delivered well over 1,000 home upgrades over the course of a year, has generated over \$390,000 in total energy savings, has spurred \$15 million in statewide economic development, and enjoys a 95% customer satisfaction rating.

III. WHY USE HIGH ROAD AGREEMENTS?

High Road Agreements ensure a wide range of benefits, including the following:

Economic Development: High Road Agreements help ensure that public investments in home performance programs lead to growth in local economies. Hiring provisions mean that local communities have better access to jobs. Coupled with fair, family-supporting wages, these provisions lead to local workers and businesses spending more dollars in their own communities, which creates a strong multiplier effect and reduces the burden on public assistance. The investment in a qualified workforce increases the competitiveness of a community, and the collaborative structure necessary to design and implement a High Road Agreement helps create strong alliances that build the capacity of the current initiative to succeed, as well as creating social capital that can be built upon to grow other green sectors in the future.



Equity and Opportunity: The targeted hiring provisions of High Road Agreements improve economic opportunity for underserved communities and increase job access for underrepresented workers. For those with historically high unemployment—including people of color—HRAs create a practical path to family-supporting jobs and careers.

Quality Work Product: High Road Agreement training provisions ensure that new workers are adequately prepared for the job. Good training, paired with wage and benefit floors, reduces worker turnover. A stable, more experienced workforce ensures high quality energy efficiency upgrades that deliver anticipated savings to consumers. This is essential to customer satisfaction and the long-term viability of the developing industry.

Broad Networks of Support: High Road Agreements cultivate networks of support for home performance or other green initiatives by addressing the interests of constituencies who might not include energy or environment as one of their top concerns. Organizations concerned primarily with workforce development, poverty, civil rights, labor, youth, jobs, and economic development groups can become champions of green programs. This broad network of supporters increases the odds that a program will succeed, and it builds political and implementation support for this and future green or High Road endeavors.

High Road Agreements create an environment and build a market where companies that provide a better product and better opportunities for their workers can compete. This advances the whole market and brings lasting economic benefits to the whole community.

Milwaukee Energy Efficiency (Me²) High Road Agreement Case Study

In 2010, the Milwaukee Office of Environmental Sustainability and Wisconsin Energy Conservation Corporation (WECC) partnered to launch Milwaukee Energy Efficiency (Me²) with funding from the U.S. Department of Energy (DOE)⁴. The program, co-administered by the City of Milwaukee and WECC, builds on the Focus on Energy model. Me² offers energy efficiency upgrades for homes and businesses through loans and rebate incentives, paired with Energy Advocates – staff who walk homeowners through the decision-making process

⁴ Me². Milwaukee Energy Efficiency (official website). Available from: <http://smartenergypays.com/>.

about home upgrades. To assist program implementation and create a skilled labor force, the Center on Wisconsin Strategy (COWS) assisted Milwaukee in designing a Community Workforce Agreement (CWA)⁵. The Agreement's provisions are designed to tackle unemployment, set standards for quality service, and establish customer confidence.

Milwaukee is one of America's poorest cities. An estimated 27.4% of Milwaukee's population is below the poverty level, compared to 12.1% and 14.4% in Wisconsin and the United States, respectively.⁶ The Agreement requires that 40% of Me²'s work hours be performed by Milwaukee's unemployed or underemployed population. A wage floor of \$17 per hour was established for residential projects, while federal Davis-Bacon Act standards apply for commercial projects. Contractors are required to hire only safety-trained workers with a certified or accredited status. The certifications currently recognized by the City are from the Building Performance Institute (BPI) and LiUNA (Laborers' Union). Contractors signatory to the Laborers' Union can get their workers trained and certified for free. LiUNA also partnered with the City of Milwaukee to train fourteen central city residents in their 80-hour curriculum and provided technical assistance to small contractors.

Me² was able to build on the city administration's strong policy commitments to supporting job creation and retention. For example, the workforce agreement incorporates the Residents Preference Program of Milwaukee's Department of Public Works, building on the idea that publicly supported construction should create job opportunities for local residents⁷. Me² currently has thirteen contractors who are pre-qualified to perform home energy upgrades. Since the program started, Me² has performed 710 home energy assessments and 262 home upgrades, with 106 more homes in bid or contract stages. In 2012, Me² is expanding efforts to generate leads and engage customers, which will increase participation in the program.

⁵ Me² Community Workforce Agreement Between the City of Milwaukee and the Wisconsin Energy Conservation Corporation. Available in the "High Road Strategies" section of the Toolkit <http://www.greenforall.com/Toolkit>.

⁶ U.S. Census Bureau. American Fact Finder, 2010 American Community Survey 1-Year Estimates. Available from: <http://factfinder2.census.gov/>.

⁷ City of Milwaukee Department of Public Works. Administrative Services Division. Available from: <http://city.milwaukee.gov/mpw/divisions/administrative/ContractAdministration.htm>.

IV. ESTABLISHING AND IMPLEMENTING HIGH ROAD AGREEMENTS

The general process for establishing and implementing High Road Agreements is remarkably straightforward, as long as you focus on a specific program or investment. Here is an overview of the major steps:

1. Assemble a diverse group of stakeholders.
2. Agree on High Road outcomes (i.e., goals). Ask and answer, "What will we have achieved when the program or investment is successfully implemented?"
3. Agree on strategies that will help achieve the goals. Strategies usually include a combination of requirements, incentives, and supporters.
4. Agree on metrics and a process to collect and report data regularly.
5. Agree on a process to improve progress toward goals by reviewing data, evaluating strategies, and implementing changes. Ongoing stakeholder involvement is essential to problem solving, innovation, and ensuring mutual accountability.

When items one through five above are written up and signed or endorsed by stakeholders, you have your High Road Agreement and can then move on to implementation and evaluation.

Below is a more detailed description of each step.

Step 1 - Assemble a diverse group of stakeholders

Choosing stakeholders and establishing an ongoing committee is key to developing the High Road Agreement. These stakeholders commit to work together throughout the implementation of a successful program. A stakeholder committee usually includes community-based organizations (such as CBO's from areas with high unemployment and organizations who canvas on environmental issues), workforce development and training entities, organized labor, contractors, and government program staff. Figure 1 shows a chart of typical stakeholders in a High Road Agreement.

Many of the stakeholder groups may have never worked together before. Some of them may even have had adversarial relationships. This can be both a challenging and rewarding process. It is impor-

tant to establish a common, upfront understanding of each stakeholder's self-interest, the value they bring to the project, what they need from other stakeholders, and the common values of the program. This will be a touchstone that stakeholders can come back to when tensions or conflicts arise and need to be negotiated.

Choose the stakeholder advisory committee carefully, as your stakeholders will design and define the High Road program. They should possess a clear commitment to the goals of the program, hands-on expertise, and relationships with a base of constituents who will be key to success. If the advisory committee is to lead a successful program, all perspectives should be represented. Community-based organizations (CBOs) that represent disenfranchised communities are just as essential as entities that administer the program for which a High Road agreement is being created. High Road contractors are essential to ensure that the program is feasible from a business perspective while still holding High Road goals at its center. Likewise, representatives from workforce development and labor ensure that worker training, skill development, and labor standards are tied into the High Road Agreement from the beginning.

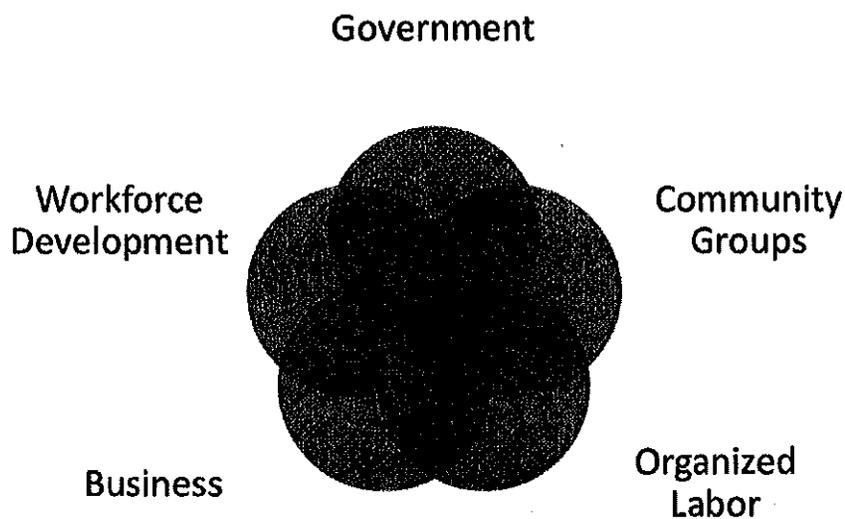


Figure 1: Key stakeholder categories for creating a High Road Agreement.

This process builds stronger, more collaborative initiatives that produce better results over time. There is a learning curve as groups shift away from working in isolation and focusing only on their own outcomes to working together with a multi-faceted stakeholder group that will ultimately produce

better outcomes with fewer resources. Each partner may need to find common ground and ensure that they have the flexibility to adjust their established systems and protocols in order to meet the broader goals of the program. Flexibility and patience are key. For the facilitator, anticipating potential conflicts beforehand and addressing them directly can result in closer communication and partnership among all interested parties.

Steps 2 and 3: Agree on High Road Outcomes (Goals) and Strategies

The program's goals are interdependent with, yet distinct from, the strategies used to achieve those goals. Creating a clear consensus on goals is important because it allows stakeholders flexibility in developing their own creative strategies to meet the goals.

The stakeholder committee should agree on goals to meet local needs. They can start by pulling from existing agreements from other communities and adapting them as needed.

Establishing formal goals and objectives is important, but if stakeholders don't agree on strategies to meet these targets, they may have less success producing High Road outcomes.

Strategies tend to employ a combination of incentives, requirements, and supports:

- **Incentives** reward actors for High Road behavior.
- **Requirements** create a level playing field by establishing minimum standards that all actors must meet, usually by establishing a contractor pool. This allows contractors to compete and grow without being undercut by low-road contractors. The RFP for the contractor pool specifies minimum requirements, and in a "best value contracting" process, it awards more points to contractors who go further.
- **Supports** allow those who would like to be High Road actors, but who need help to do it, to achieve their goals. Contractor supports are key to helping a diverse group of contractors compete and are important in developing a High Road market.

Programs do not need to start from scratch. It can be helpful to use existing High Road Agreements as a starting point and then adapt them to local circumstances. A sample HRA from Community Power Works can be found at www.greenforall.org/HRABrief. More examples are in the "High Road Strategies" section of the Toolkit.

Following are some examples of typical goals:

Goal 1: Good Jobs

High Road Agreements seek to create high-quality jobs with good wages and benefits. Family-supporting wages are key to stabilizing individuals and families. High-quality jobs help professionalize an emerging industry and create a level playing field in which High Road contractors are competitive and can grow. The stakeholder advisory committee is key to defining a wage requirement that will offer decent wages without burdening contractors. Labor unions have decades of experience understanding prevailing wages in industries and are important partners in this decision.

Benefits, including health insurance, sick days, vacation, workers' compensation, pension or retirement plans, a voice on the job, and other non monetary benefits, are also elemental to attracting and retaining employees and to the success and viability of families. Stakeholder Advisory Committees work together to determine which benefits should be prioritized as requirements and which might be incentivized through additional work or better scoring on applications.

Strategies:

Wage Floors: HRA programs usually establish a wage floor to ensure this goal is met. The wage floor will vary based on the local market. It can be set by using prevailing wages as a benchmark, by determining a living wage for the area, by using a percentage (180-400%) of the minimum wage or of the federal poverty line, or by considering housing prices in the area. This is an area where there may be legal issues you will want to review, depending on the nature of the program and the state's prevailing wage law.

Contractor Pools: Creating a contractor pool with base wages and other minimum requirements for those who want to be awarded work is an important strategy. Requests For Proposals should include the High Road requirements, and contractors must agree to them in writing when they apply to be a part of the pool. In addition, the standard program contract that is signed by each homeowner and each contractor for every project should include an agreement to meet the High Road targets.

It is best to start with a small, limited contractor pool at the beginning. This pool can expand as demand for the program grows. An open pool, though it seems more inclusive, may mean that instead of five contractors happy with the 20 homes they are working on, there will be 20 contractors frustrated that they have to compete for only five jobs.

Best Value Contracting: High Road Agreements often use a strategy called "best value contracting" to

incentivize contractors to provide better pay and benefits. Under this strategy, the contractor pool still has required minimums; however, rather than awarding work to the lowest bidder who meets minimum requirements, best value contracting awards points for experience, qualifications, and evidence of High Road policies (that achieve economic development goals). In this system, the best-ranked contractors are awarded contracts, even if their price is somewhat higher than that of minimum bidders.

Goal 2: Trained Workforce

HRAs usually require a minimum amount of training for the workers of participating contractors. This meets two goals: having a highly qualified workforce and creating opportunity for targeted communities.

The U.S. has long held an economic advantage by investing in maintaining a highly qualified workforce. As our economy becomes increasingly specialized and we develop new economic sectors, there is a risk of training people for jobs that don't exist if we do not specifically link training programs to actual employers. A High Road Agreement makes a direct connection to employers by requiring them to hire from training programs and by creating systems for training programs and employers to work closely together in order to meet employers' needs.

The specific workforce goals and hiring strategies will vary depending on the local community and negotiations between stakeholders. Some key strategies are listed below.

Strategies:

Designated Qualified Training Programs: Programs identify workforce development agencies who can not only prepare a skilled workforce but also provide a key link between contractors and targeted workers. The definition of a qualified training program and subsequent Requests for Qualifications (RFQs) should include demonstrated relationships with organizations that serve targeted communities, evidence of wraparound supports to ensure these workers will have an opportunity to succeed, availability of practical on-the-job and desktop training, and demonstrated relationships with employers and/or union apprenticeship programs to ensure career pathways⁸. One or more programs are selected as a designated training program and contractors are required to make all (or some per-

⁸ See the "Workforce Development and Education" section of the Toolkit (<http://www.greenforall.org/Toolkit>).

centage) of new hires directly from these programs.

Wage Subsidies and Training Wages: Some programs provide subsidies to employers who offer on-the-job training or who hire workers transitioning from the welfare or criminal justice systems, workers with disabilities, returning veterans, and others. Workforce representatives on the stakeholder advisory committee can help identify and leverage such programs. This kind of incentive helps offset contractor concerns that they will not get the value they need from new workers, and it compensates them for the skill training they are providing. Trainee wage rates can also be established, though this can be a complicated point in negotiations as there is a history of established practice related to apprenticeship rates, and there is a risk that new employees will be exploited at lower wage rates. These barriers can be worked through by local stakeholders who best understand the local labor market.

Long Island Green Homes Case Study

In the Long Island Green Homes (LIGH) program, the Town of Babylon, NY saw the potential to extend good green jobs to targeted workers. Supervisor Steve Bellone had long been working to prepare residents in Wyandanch, which is Long Island's most economically distressed community, for jobs with career pathways. He developed a resource center in the neighborhood that offered pre-apprenticeship training, soft skills development, and wraparound services for neighborhood residents interested in exploring careers in the green economy. These opportunities were paired with survival employment within the maintenance and operations division of the Town of Babylon.

Simultaneously, Long Island Green Homes worked to connect the resource center to jobs resulting from its program in order to create a career pipeline. LIGH partnered with LiUNA (Laborers' International Union of North America) Local 10 to include signatory contractors in home performance work. LiUNA, in turn, worked with the Wyandanch Resource Center and the Long Island Progressive Coalition (LIPC), a community-based organization, to recruit residents from disadvantaged communities for apprenticeships and job placement with their home performance contractors.

Each partner played a critical role in creating a strong career pipeline for community members. The Wyandanch Resource Center prepared and supported workers with the greatest barriers to employment to achieve the stability needed to keep their jobs. LiUNA continued

the training of these and other local workers in order to place skilled workers with contractors. They also supported small and emerging contractors to increase their capacity to perform the quality work required in the home performance field.

In addition to recruiting workers for LiUNA, LIPC quickly added a demand generation component to their community outreach work. As a trusted messenger, LIPC is able to educate homeowners about energy efficiency and the LIGH program, increasing homeowner participation and leading to more work for contractors. This in turn creates a greater need for workers, which is a win for their constituents. LIGH provided training and marketing materials to organizers doing outreach, allowing them to communicate effectively without wasting limited resources. This created a win for everyone involved: more homes participated in the Long Island Green Home program (800 to date), LiUNA's Opti-Home program resulted in stronger contractors with more work, more jobs were provided for Babylon's most vulnerable residents, and all the benefits of energy efficiency appeared in Babylon's homes.

Goal 3: Access to Career Opportunities

In U.S. communities, the lowest unemployment rates for African Americans and Latinos are about equal to the highest unemployment rates for whites.⁹ In order to meet goals to create opportunity for communities of color and communities with high unemployment, High Road Agreements identify targeted communities and ensure that they have access to the hiring pool.

Strategies:

Local hire: Hiring requirements are one strategy to ensure that investments generate economic opportunity for local workers. However, explicitly requiring local hire can be open to legal challenges, as can hiring requirements based on race or gender. Strict local hire provisions don't necessarily ensure that jobs go to targeted workers, and they can actually limit opportunity for workers who are hired. If every city only offers opportunity for their own residents, it limits the opportunity for new workers in the industry.

High Road Agreements often require that a percentage of the work (generally measured in dollars or person-hours) be performed by targeted workers. These workers tend to be from the local community, and agreements designed around targeted worker provisions tend to have stronger legal standing.

⁹ Economic Policy Institute, Issue Brief #322, February 16, 2012. Available from: <http://www.epi.org/publication/ib322-african-american-latino-unemployment/>.

Targeted hiring: Targeted hiring provisions require that disadvantaged or underrepresented workers perform a certain percentage of project hours. Targeted communities are defined by the stakeholder committee and can include women, veterans, the homeless, the formerly incarcerated, low income workers, people with disabilities, or any other group where unemployment is high and access to opportunity is needed, particularly communities of color. Targeted hiring can require that contractors hire workers from specific zip codes with defining criteria such as income level or percentage of unemployment. They may follow a “first source” hiring agreement with qualified training programs that work with underserved populations.

To define targeted communities, programs can create definitions such as a “historically disadvantaged individual,” which one program defines as “a city resident who comes from a group underrepresented within the sector, has a household income less than a certain percentage of area median income, or faces barriers to employment.”

Depending on how they are defined, local and targeted hire provisions can be open to legal challenges. The Community Benefits Law Center (<http://www.communitybenefits.org/legal>) has good resources that can help stakeholders understand potential legal issues as they develop a High Road Agreement. It is important to have a local lawyer who understands High Road strategies review the language in an agreement. This ensures that the agreement will meet the stakeholder committee’s equity goals while also standing up to potential legal challenges.

Qualified Training Programs: Designating qualified training programs is a key link in ensuring access to opportunity for targeted workers. Examples of RFPs for qualified training programs can be found in the “Workforce Development and Education” section of the **Toolkit**. In addition to specifying certifications, on-the-job training, wraparound support services, and relationships with employers, the RFP language should ensure that “qualified training programs” demonstrate that they effectively reach and serve targeted communities.

Goal 4: Creating Career Pathways for Workers

High Road Agreements can create incentives for contractors to support employees in developing their skills and advancing their careers. Workers who become equipped with a broad range of technical expertise are better able to market themselves and advance within their career, and they serve to further professionalize the market. The development of a strong skill set ensures more efficient work and a better-quality work product.

Strategies:

Strategies to develop career pathways include the following: requiring contractors to invest in certifications and credentials for employees; offering a broad range of on-the-job training and opportunities to gain practical experience; and promoting employees from within. It is important to establish mechanisms such as employee scholarship programs and targeted training programs to support and encourage contractors who help advance the skills and position of entry-level employees. Connections to community colleges and building trade unions can be important in helping workers understand what advanced career pathways look like. Figure 2 maps out many of the elements that need to be present and coordinated in order to create pathways into middle class careers.

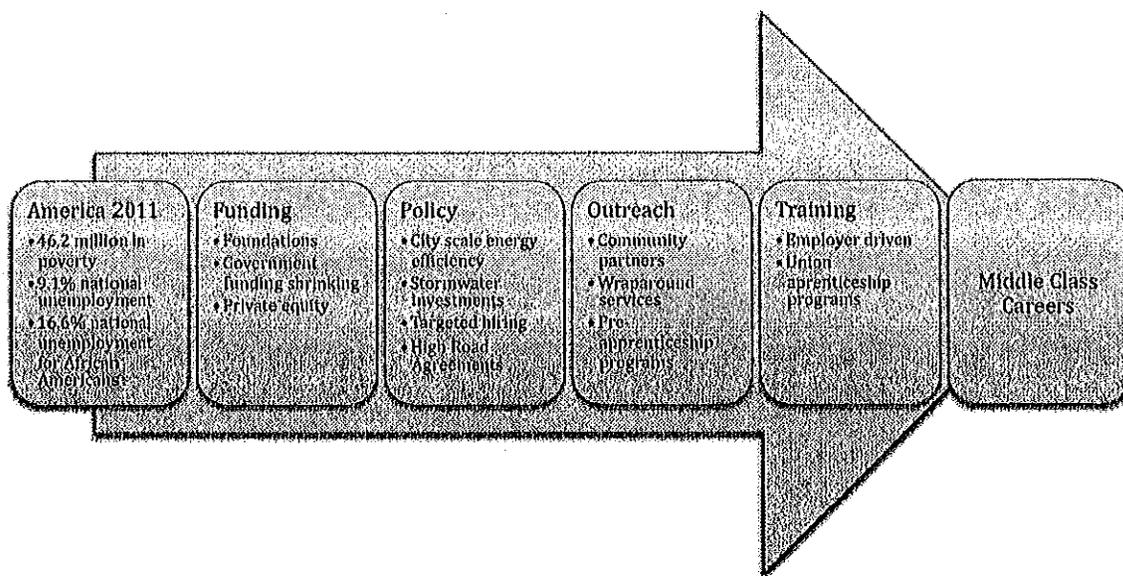


Figure 2: Creating successful career ladders.^{10 11}

¹⁰ Unemployment numbers from Economic Policy Institute, Issue Brief #322, February 16, 2012. Available from: <http://www.epi.org/publication/ib322-african-american-latino-unemployment/>.

¹¹ Poverty numbers from 2010 census data cited by Poverty in the United States, Urban Institute, Austin Nichols, September 13, 2011 Available from: <http://www.urban.org/publications/412399.html>.

Goal 5: Contractor Diversity

In parallel with their goals to increase the participation of underrepresented workers, High Road Agreements often prioritize the participation of diverse businesses.

Strategies:

Targets for Historically Underrepresented Businesses: Standards to achieve this goal may require that a certain percentage of project dollars be awarded to local businesses or to businesses owned by historically disadvantaged or underrepresented groups, such as women, minorities, or veterans. Ensuring that the stakeholder advisory committee includes partners with deep connections to historically underutilized businesses are key to ensuring that these businesses are brought to the table in a meaningful way. As with race, gender, or geographic preferences in hiring, this is an area that raises potential legal issues, and a lawyer's review will be helpful.

Business Supports: Providing supports to all contractors, but particularly historically underutilized businesses, is key to the success of High Road city scale energy efficiency programs. This is essentially a strategy to grow the private sector by leveraging public programs and resources to spark the emergence and professionalization of a new market. Due to the importance of business supports as a strategy, we devote a separate section to the topic below.

Step 4: Agree on metrics and processes to collect and report data regularly

The objectives and requirements set forth in a High Road Agreement should produce specific and measureable outcomes that program administrators can evaluate objectively (like hours worked by targeted workers, wages earned, or dollars contracted to historically underutilized businesses). As a part of developing the Agreement, the stakeholder committee and the administering entity must identify realistic and effective data collection processes from the beginning.¹² They should identify what data the program will collect and report, and they should focus on a system that is streamlined and easy for businesses to use. Where possible, data requirements should match data that businesses already track. For example, existing systems that businesses use to make payroll can also be used to

¹² See Toolkit (<http://www.greenforall.org/Toolkit>) "High Road Strategies" section for examples.

track wages. Technical assistance for contractors can supplement the work required to set up appropriate tracking systems.

Evaluations should measure indicators that directly pertain to HRA goals. In energy efficiency and home performance programs, common categories include the number of homes upgraded, the amount of energy saved, the percentage of local and targeted hires (number employed, hours worked, etc.), the number of workers trained, the wages paid (for different types of workers), the types of benefits offered, the availability of promotions and career development, and the number of local and diverse businesses receiving work (either as the number of HUBs with contracts or the total amount of funds paid to HUBs). In addition, evaluations should attempt to assess the improvements brought about by the HRA, such as an increase in local wages, formation of new relationships, and strengthening of infrastructure to support businesses and help community-based organizations serve their constituents.

Step 5: Agree on a process to review data, evaluate strategies and adapt program as necessary

Before the agreement is signed, stakeholders should establish a process to continue meeting and working together to implement and adjust the program. Many programs create smaller committees that focus on particular goals and work through challenges as they arise. Successful initiatives set up regular monthly or quarterly meetings to review data and make adjustments to the program. This is one of the factors that helps to make High Road energy efficiency programs more successful than their counterparts. As obstacles or opportunities come up, the program can rely on the relationships it has created in order to ensure its success.

Contractors receiving work from a High Road program need to be held accountable for achieving the goals set forth in the High Road Agreement. Enforcement should focus primarily on working with stakeholders to meet program goals by evaluating progress towards goals, identifying problems and potential barriers to the program, and adapting the program as needed to help meet goals. After a challenge is identified, it is important to understand the source of the problem and attempt to resolve it cooperatively with the input of the stakeholder advisory committee before considering punitive action.

Programs should also identify opportunities to publically celebrate milestones and publicize success

using both data and the stories of workers, homeowners, and families who have benefited. These celebrations build momentum, good will, publicity and political capital—all of which help an initiative meet its goals.

Community Power Works (CPW) Seattle Case Study

Leveraging a \$20 million federal investment that will yield more than \$100 million worth of energy upgrades across six building sectors, Community Power Works (CPW) provides homeowners and local businesses access to affordable green audits, financing options, and incentives to make their homes and buildings more energy efficient. The program has a goal of upgrading 2,000 homes, and in spring of 2012 had 1,500 homes in the program queue, with 135 homes upgraded and 65 more in process.

Like many initiatives, Community Power Works created a Stakeholder Evaluation and Implementation Committee (SEIC) to help design their High Road Agreement and program. While this took time and was hard work, the High Road Agreement that was developed is one of the strongest in the country. It is available at www.greenforall.org/HRABrief for your reference. Almost half (47%) of the hours of work on the project have gone to targeted workers (low-income individuals, veterans, and individuals with other barriers to employment). Additionally, almost 25% of CPW incentive dollars have gone to minority-owned, women-owned, veteran-owned, or non-profit businesses.

The SEIC learned that the most difficult issues were not always the most obvious. For example, while many of the early conversations were about wage rates, it soon became clear that a bigger issue was creating enough demand for the program and thus allowing for new hires. The program started by trying to meet many ambitious High Road goals at once, including focusing outreach solely on lower-income communities, where it was more difficult to generate demand from homeowners. This meant less work and fewer hires. A programmatic decision was made to expand services to the whole city, generating more demand and more hires, while continuing to include the targeted community. This increased the program's conversion rate and resulted in more hiring.

To work through these issues, CPW learned the importance of constantly building relationships among stakeholders. For negotiating tricky issues, small groups were best, whereas

large groups were best when the goal was to share information. The political capital built by the stakeholder process that developed the High Road Agreement helped create the relationships and accountability that made it possible to work through these issues and create a successful program. While the High Road Agreement took time to develop, CPW now has a more successful program than many others who did not create such broad community buy-in at the beginning of the process.

<http://www.communitypowerworks.org/>

V. WRITING AND INSTITUTIONALIZING THE HIGH ROAD AGREEMENT

Once the stakeholder committee has agreed on goals, strategies, metrics, and a process for ongoing implementation, the agreement should be institutionalized by having everyone contribute their signatures to the final document. Signing the High Road Agreement helps to create ongoing mutual accountability.

Where possible, High Road Agreements should also be endorsed by the City Council or other government body. This gives other leaders a chance to stand with the group of stakeholders and can pave the way for smooth implementation with public agencies and staff. Finalizing the agreement with signatures and getting it endorsed by elected officials can also be a milestone worthy of celebrating with the wider public. Promoting the agreement and the diverse interests that support it can help increase public awareness and market adoption of the energy efficiency program.

VI. ESSENTIAL STRATEGIES – PROVIDING BUSINESS SUPPORT

As mentioned above, High Road Agreements for energy efficiency initiatives are a way of leveraging public dollars to spark a private-sector market and can help to support businesses in a growing new sector. For that reason, we discuss business support strategies in detail in this section. More information and program documents are available in the **Toolkit** under the “Increasing Contractor Capacity” section.

Providing support to participating businesses can make it easier to implement HRA requirements. It can also increase access to new streams of work for small or underrepresented businesses that High Road programs prioritize. Existing High Road programs have identified a need among new and emerging contractors for support in the following areas: outreach and information, access to bonding and insurance, workforce development, business capacity building and mentorship, marketing tools, and easing access to capital. Local small business resources may already exist to support capacity development among contractors, or it may be necessary to create new resources.

Outreach and Information: Outreach to historically underutilized businesses (HUBs) is especially critical, not only to facilitate communication with HUBs but also to accurately assess their needs while implementing High Road Practices. HUBs include contractors and subcontractors, and outreach is best done through trusted networks to inform them about business opportunities in the initiative.

Workforce Development: Since workforce requirements are stringent, measures should be put in place to facilitate easy access to training, certifications (such as the Building Performance Institute or BPI certifications), and a pool of skilled workers. Information should be provided about necessary or desirable certifications, group procurement of benefits and materials, and creating a qualified contractor pool. Programs should also facilitate communication, such as informing training organizations of contractor needs, assisting in the creation of formal relationships with training and apprenticeship programs, and developing outreach programs to establish a pipeline of workers and contractors. They should also provide indirect support, such as scheduling certification classes at convenient times and locations. Finally, they need to provide direct support in the following forms: high-quality business training programs, technical assistance for contractors, providing and helping to secure access to scholarships to HUBs for BPI training and certification, providing options for meeting training requirements for new entry-level hires, and technical assistance. The latter might include assistance on how to provide benefits to employees or organizing participating employers into benefit procurement pools to reduce costs.

Capacity Building and Mentorship: Support can also take the form of networking events to make direct connections between contractors and subcontractors and other supportive entities or business partners. Including subcontractors facilitates the development of “mentor-sub” relationships in an effort to promote diverse business participation, suppliers who can best support contractors, and workforce intermediaries who can facilitate smooth interactions with training programs and new hires.

Provide Technical Assistance and Business Development: Local businesses have fewer resources



available to them than larger conglomerates, and they benefit from direct coaching and support. This coaching is especially helpful in accessing insurance and marketing, developing cooperative marketing materials, training in sales and soft skills, establishing infrastructure for job estimating, costing, and accounting, and determining capital requirements for expansion in the program as well as other home performance sector opportunities. Of course, it is also very important to provide support that allows local businesses to take part in the HRP, such as complying with program reporting requirements, reducing job costs, and increasing margins while continuing to be a High Road employer. Technical assistance can also include identifying opportunities for participating contractors to work together, such as using bulk purchasing agreements to share the costs of additional training, benefits, marketing, and supplies.

Marketing: Government agencies can use their influence to increase local business competitiveness by giving them attention, certifying them as condoned contractors, and sponsoring them to get additional certifications like those offered by BPI. When partners see that High Road contractors are helping their community (mostly through hiring), they can be valuable assets in creating business (or demand) for these contractors for a reasonable fee per upgrade completed.¹³

NYSERDA's Green Jobs-Green New York (GJGNY) Aggregation Case Study

Creating community-based demand is a strategy to achieve High Road outcomes when there is not a full High Road Agreement for an initiative. Community-based organizations have long honed their ability to connect with hard-to-reach communities by becoming trusted messengers and developing compelling messages. The D.C. Project pioneered the strategy of leveraging these relationships to create demand for energy efficiency upgrades. LiUNA has played a leadership role in communities like Long Island, Portland, and Seattle, where it has helped organizations deliver customers to contractors in exchange for High Road provisions. In return for marketing the program and providing leads to High Road contractors, community-based organizations can get contractors to agree to High Road outcomes such as wage and benefits standards and targeted hiring requirements. Resources from these programs are

¹³ See the "Marketing and Demand Creation" section of the Toolkit: (<http://www.greenforall.org/Toolkit>)

available in the Toolkit under the “Marketing and Demand Generation” section.

The Center for Working Families (CWF) worked closely with NYSERDA to initiate a community-based aggregation pilot program. Through this pilot, NYSERDA is leveraging the power of community organizations to increase demand for energy efficiency improvements among homeowners. Since community organizations have their fingers on the pulse of neighborhood politics, social networks, and trends, they know how to get low- and moderate-income homeowners excited about energy efficiency. They expand the market by targeting homeowners who have been left out of other energy efficiency programs – those who are too low-income to put up cash for energy efficiency work or take out an affordable loan but are too high-income to qualify for federally subsidized programs. The Center for Working Families is preparing community organizations with messages and materials that help them communicate about the program. They have also worked extensively with contractors to build trust with community groups.

The pilot project allows community organizations to sign up groups of homeowners in targeted areas to receive energy efficiency upgrades through NYSERDA’s Home Performance with ENERGY STAR program. By aggregating customers, contractors can deliver energy efficiency services faster and for a lower cost, and demand for energy efficiency gains momentum within the neighborhood.

Eligible Home Performance contractors must sign an agreement with NYSERDA. These agreements, developed collaboratively between NYSERDA and the locally-administrating community organization, include High Road provisions that result in better wages, local hiring, training and subcontracting to small local contractors (who are often minority-owned businesses). This is a good example of an interim policy that creates better jobs, even when it’s not politically feasible to win statewide standards for home energy upgrade workers.

For more information, contact Anthony Ng at the Center for Working Families.

Access to Capital: Another necessary support is to help the program’s High Road contractors to connect with capital providers that can meet their particular needs. For example, a line of credit product that is designed to address working capital shortfalls can also address the issue that many small businesses face: full payment comes only upon completion of all work. In addition, working capital products can be designed to tackle other shortfalls that might occur in the program, such as marketing and

outreach expenses (usually for a full service model), bundling multiple projects, and processing utility incentives. The continued health of these local businesses and their ability to expand relies on access to capital for acquiring equipment and scaling up.

VII. CONCLUSION: HOW DO HIGH ROAD AGREEMENTS FIT IN TO LARGER POLICY DISCUSSIONS?

High Road Agreements are an evolution of a strategy with a long history. Procurement guidelines and best-value contracting are common practices for governments and private companies at local, state, and federal levels. More and more municipalities are using Community Benefits Agreements or other High Road strategies as a part of the negotiation around development projects. Organizations like The Partnership For Working Families, the Community Benefits Law Center, and the Center on Wisconsin Strategy, as well as Green For All, have supported communities in leveraging their buying power and their public projects. As our economy continues to struggle on the one hand but on the other hand sees the emerging growth of green industries, many communities have learned the hard way that without actual policies in place, they will not maximize the benefits of public dollars and projects. High Road Agreements offer one strategy on a larger menu for communities looking to build High Road industries and spark the growth of an emerging green private sector.

The success of these strategies has not gone unnoticed, and in a political climate where there are polarized discussions about the role of government, it will be important for the broad range of industries, communities and stakeholders who see the clear benefit of High Road strategies to use data and stories to draw attention to the way HRAs kick-start economic development. As we see more data emerging, and as the economic and human benefits High Road strategies bring to our communities become clearer, we can answer questions about the role of government or the reasons for negotiating High Road Agreements with a question of our own: "Why forgo a High Road Agreement and leave these dollars and opportunities on the table?" We would expect any private sector actor to negotiate the maximum value on their project, and we should expect no less from our government when they use taxpayer dollars to support an industry.



VIII. ADDITIONAL RESOURCES

- The Community Benefit Law Center
<http://www.communitybenefits.org/legal/>
- Efficiency Cities Network, COWS
<http://www efficiencycities.org/>
- The Partnership for Working Families
<http://www.communitybenefits.org/>
- Toolkit for Residential Energy Efficiency Upgrade Programs, Green For All, 2011
<http://www.greenforall.org/Toolkit>

Green For All is available on a limited basis to consult on high road projects.

Contact consult@greenforall.org for more information.



Green for All State and Local Initiatives
greenforall.org/HRABrief

NWAFF Concept Paper
Trends and Best Practices Outline

Trends

Social Enterprise vs. Program

Bottom line is self-sufficiency-social enterprise has it and a program doesn't. In order to have it, organization must invest significant resources in business acumen, marketing, testing and proving the concept and its scalability.

Programs are important and worthy investments and often time accomplish an organizations mission but they will never grow to the point of profitability in which they can support the organization or often themselves.

We are focused on social enterprises as self-reliant entities that accomplish add social value either by employing very hard to employ groups or generate new opportunities for low-income populations.

Social Enterprises trends of note:

Several areas that hold great potential for social enterprises and in which social enterprises continue to innovate to achieve great impact. Look for the competitive advantage-can this enterprise have a niche in the market that it can fill better than its non-social competitors?

Below we emphasize Organizations using social enterprise to successfully pursue mission and the ways in which foundations and public/private partnerships have maximized impact:

Emerging Markets

Waste Stream and Recyclables – with the increased awareness of the need for conservation of our natural resources and decreased dependence on non-renewable sources of energy, finding ways to re-use items that are disposed of is gaining focus. With the increasing prioritization of “green” and “environmentally sustainable products,” a business opportunity presents itself for enterprises that divert what was formerly refuse for re-use and recycling.

- **Mention also:** Collaborative branding – developing partnership so that a reuse facility is co-branded with one in a neighbor city—may be separate ownership but power of the brand is important as people continue to be more mobile than ever

Financial Products – not necessarily social enterprises but increasing assets for low income people that have not formerly had access to non-predatory financial products.

Food Industries – the food industry has long been looked to as a social enterprise outlet and some models are promising while some models, such as small, labor intensive cafes have proven untenable as social businesses

Emerging Markets			
Market Area	Example	Innovation	
Waste Stream and Recyclables	Mattresses	Goodwill	<i>partnering with local governments and waste management companies create sustainable supply chain; mattress competition creates value added project</i>
		DR3	
		Carpet	SWIFT
	Tire Recycling		
	E-waste	Green Citizen	
	Construction and Demolition	Leed Retrofit and Recycling	
		CW management net	
		Lumber re-use	
		Re-Use People	
	Universal Waste Management	Institution Recycling Network	also distribution channel for recycling.
Eco Villages		<i>multi-tiered re-use ecovillages with recycling and reuse business incubation—multiple material processing and social enterprise all under one roof—sort of a MURF (material recycling facility) but for re-use</i>	
Recycling		one distribution channel is national housing authorities	
Food Composting	Food Scrap Animal Feed		
	Jepson Prairie		

	Mulch	Rubicon Landscaping	
Financial Products		Emerge	<i>Payroll service provider allows scalability</i>
		Ho-Chunk	<i>how many loans and how many successes-peer to peer creates critical mass of capital where none existed before and peers more willing to lend to those that are "one of theirs" that might not be "credit worthy" by bank criteria</i>
		HEED, Inc?	
		Goalspring	<i>Debt management for low-income</i>
		WISE	
Food Industries			
	Local and Organic Premium Food Products		
		Frog Ranch	
		Ace Net	
		Grameen Danone	Fortified yogurt produced in Bangladesh and affordable for purchase by low-income Bangladeshis-created by Danone yogurt and Grameen bank partnership
		Enterprise Center	
		Stonyfield?	(Seems to have a socially responsible business model and started an institute "boot camp" for entrepreneurs-but no clear social enterprise aspect to it-more focused on environmental.)
		Seven Oaks Ranch	
	Commercial Kitchens and Consulting		
		Fare Start / Kitchens with Missions	
		Campus Kitchens Project	
		La Cocina	
	Other food		

		Greyston Bakery	<i>partnership with Ben and Jerry's allowed Greyston employ difficult to employ people with little cost- intensive training as consistent quality and presentation was unnecessary</i>
		Rubicon Bakery	<i>Rather than an operational grant, Mott Foundation gave product development grant allowing bakery to produce a new confection product in the effort to make it self sustaining</i>
		JUMA concessions	<i>partnering with sports arenas allow JUMA to employ a large number of youth and generate enough sales to earn revenue</i>
		Revolution Foods	

Technology Innovations – Using technology to create larger distribution channels that previously possible is allowing some groups to reach customers formerly inaccessible and scale to the point of self sufficiency

Technology Innovations	
Example	Innovation
Kiva	<i>using the Internet to create a uniquely personal “real time” link between the public and entrepreneurs around the world created a flood of small donations to create large investments in international development</i>
Dehari	<i>using cell phones to allow formerly unbanked people access to financial products created an entire business in Atlanta</i>
LaborFair	<i>using the Internet to link consumers with providers of services AND reviews by other customers allowed small service oriented businesses to reach customers without huge marketing budgets</i>

Other

The Enterprising Kitchen?

Veterinary assistance – shelters, vet assistance good career ladder, growth in petcare over next 10 years.

- a. Coffee shops and pet services attached to dog parks
- b. Mobile pet care- vaccinations and grooming
- c. Boarding and doggie day care
- d. Pet Therapy for infirm and elderly

Green Dry Cleaning -central location for processing and retail storefronts

Bike Share in large cities

PROSA

IDEA Village -

BDF and Net Impact – climate corps – expansion of talent

CEO

Home-team Janitorial Services

American Rain water Catchment Systems

Policy Best Practices

Stimulus Package -- JH

WAP

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Best Practices in Green Re-Entry Strategies

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Green For All is dedicated to improving the lives of all Americans through a clean-energy economy. The national organization works in collaboration with the business, government, labor, and grassroots communities to create and implement programs that increase quality jobs and opportunities in green industry — all while holding the most vulnerable people at the center of its agenda.

www.greenforall.org

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Cover image from Flickr user Valerie Everett, www.flickr.com/photos/valeriebb
Individuals shown are not participants in re-entry programs.

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1. INTRODUCTION

The United States (U.S.) is now the largest prison state in the world, incarcerating 2.25 million people.¹ This represents 23 percent of the world's prison population, a number significantly off balance for a country that makes up only 5 percent of the world's population.² Incarceration rates have increased greatly since the 1970's, and in particular, more during the 1990s than in any previous decade.³ This is no accident. Mandatory minimum sentencing and "three strikes" laws, many of which were passed by states in the 1990s, mandate a specific amount of jail time for a crime, with no leeway or discretion involved for the crime committed. The result is more people in prison for longer periods of time.⁴

Contrary to their intention, these laws do more than just take violent criminals off the streets; they also impose harsh penalties for individuals who commit more minor offenses. In California, for example, more than half of the third "strikes" that have resulted in a 25-to-life sentence involve neither serious nor violent felonies. Shoplifting can escalate to a third-strike felony for those with prior convictions of petty theft, resulting in life imprisonment. Moreover, 11 percent of federal prisoners today are serving time for violent crimes, compared to 54 percent for drug offenses.⁵

Incarceration rates are unevenly distributed across racial and ethnic lines. In 2000, African Americans replaced Caucasians as the largest proportion of prisoners in U.S. jails. By 2006, African Americans, representing only 12 percent of the population, constituted 38 percent of sentenced prisoners.⁶ If current incarceration rates remain unchanged, about one in three African American males, one in six Latino males and one in seventeen Caucasian males will go to prison at some point during their lifetime.⁷

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- 1 Stemen, Don. *Reconsidering Incarceration: New Directions for Reducing Crime*. Vera Institute of Justice, 2007. <http://www.vera.org/content/reconsidering-incarceration-new-directions-reducing-crime>
 - 2 Walmsley, Roy. *World Prison Population List. 8th edition*. International Centre for Prison Studies. School of Law, King's College London. 2009.
 - 3 Schiraldi, Vincent, Jason Colburn and Eric Lotke. *Three Strikes and You're Out. An Examination of the Impact of 3 Strike Laws 10 Years After Their Enactment*. The Justice Policy Institute. www.justicepolicy.org/uploads/.../04-09_rep_threestrikesnatl_ac.pdf.pdf
 - 4 Austin, James, *Reducing America's Correctional Populations, a Strategic Plan 2009*, National Institute of Corrections, 2009. <http://community.nicic.gov/forums/storage/95/16219/ReducingCorrectionalPopulations-Austin%20white%20paper.doc> (Viewed on April 2, 2010).
 - 5 Diaz, John. *Crime and Punishment, Politics of "three strikes" law*. San Francisco Chronicle. May 8, 2011. <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2011/05/07/INN21JB7OD.DTL>
 - 6 Bureau of Justice Statistics. *Prisoners in 2006*. US Department of Justice. December 2007. bjs.ojp.usdoj.gov/content/pub/pdf/p06.pdf
 - 7 Bonczar, Thomas P. *Prevalence of imprisonment in the U.S. population, 1974-2001*. Bureau of Justice Statistics, Special Report. US Department of Justice, Washington, DC, August 2003. <http://bjs.ojp.usdoj.gov/index.cfm?ty=pbdetail&iid=836>

This imbalance is largely the result of the U.S.'s "war on drugs."⁸ Law enforcement practices and drug-related policies have resulted in people of color being prosecuted for drug offenses far out of proportion to the degree that they use or sell drugs. In 2005, for example, African Americans represented just 14 percent of current drug users, but 53 percent of persons sentenced to prison for a drug offense.⁹

In the U.S., approximately \$70 billion is spent each year to incarcerate people in prisons and detention centers, or keep people under watch on parole and probation.¹⁰ The growth rate in state corrections expenditures over the last 20 years is second only to the growth in state spending on Medicaid.¹¹ Moreover, the social and economic costs on communities include wrecked lives, broken families, interrupted educational attainment, reduced earnings and decreased economic productivity – all of which contribute to an ongoing cycle of poverty that disproportionately impacts poor neighborhoods.

Individuals and their families feel the consequences of incarceration well after their release from prison. Such is the case with respect to both employment opportunities and earnings. Competing for jobs is extremely difficult for people with criminal histories, who typically do so with little to no previous work experience or skill credentials. In fact, individuals with criminal histories face unemployment rates of 60 to 70 percent.¹² For those lucky enough to find employment, previous incarceration reduces their wages by 11 percent and diminishes their yearly earnings by 40 percent.¹³

Lack of skills and work experience is particularly prevalent among formerly incarcerated members of minority communities, wherein the young are disproportionately represented. This phenomenon has far reaching consequences on future employment prospects. The years between ages 19 and 30 are critical to establish a track record of employment and work experience. The greatest concentration of African Americans and Latinos in custody is between the ages of 20 and 29, while the greatest concentration of Caucasian males is between the ages of 35 and 44.¹⁴ Missing the opportunity during these prime years to enroll in education and training programs, gain work experience, and make connections with employers

8 American Civil Liberties Union. *10 Reasons to Oppose "3 Strikes, You're Out."* March 2002. <http://www.aclu.org/racial-justice/prisoners-rights/drug-law-reform/immigrants-rights/10-reasons-oppose-3-strikes-youre->

9 Testimony of Marc Mauer, Executive Director, The Sentencing Project. *Racial Disparities in the Criminal Justice System*. Prepared for the House Judiciary Subcommittee on Crime, Terrorism, and Homeland Security. October 29, 2009. http://www.sentencingproject.org/doc/publications/rd_mmhousetestimonyonRD.pdf

10 NAACP Smart and Safe Campaign Presents: *Misplaced Priorities: Overincarcerate. Undereducate*. NAACP. May 2011, 2nd Edition. <http://www.naacp.org/pages/misplaced-priorities>

11 The Pew Center on the States. *One in 31: The Long Reach of American Corrections*. The Pew Charitable Trusts, Washington, DC Mar. 2009. http://www.pewcenteronthestates.org/news_room_detail.aspx?id=49398

12 Ibid.

13 The Pew Charitable Trusts. *Collateral Costs: Incarceration's Effect on Economic Mobility*. The Pew Charitable Trusts, Washington, DC, 2010. http://www.pewtrusts.org/our_work_report_detail.aspx?id=60960

14 Sabol, William J., PhD, and Couture, Heather. *Prison Inmates at Midyear 2007*. US Department of Justice, Bureau of Justice Statistics. Washington, DC, June 2008. <http://bjs.ojp.usdoj.gov/content/pub/pdf/pim07.pdf>

and unions presents incarcerated youths with often insurmountable challenges to finding employment upon release.

The inability to find work or sustainable wages is a major contributor to extremely high recidivism rates. The Pew Center on the States finds that four in ten offenders return to prison within three years.¹⁵ The magnitude of this problem – and the challenge it presents – is daunting. Approximately 28 percent of adults — 68 million, in total — have a criminal record. This is a staggering figure that does not even account for young people under the age of 18 with a criminal history.¹⁶

Minimal employment prospects effectively sentences many of the formerly incarcerated back to prison. Youthful indiscretions or minor offenses can lead to wrecked lives with no shot at redemption. The human cost alone to individuals, their families and communities is tragic, and yet it is a potential reality that tens of millions of Americans face today. Individuals released from prison pay their debt to society in the form of time served. It should not translate into a debt they pay for life.

Research shows, however, that individuals who participate in vocational training while incarcerated and/or post-release show better employment outcomes once out of prison.¹⁷ In addition, participation upon release by ex-offenders in transitional jobs programs – which combine paid, short-term employment with skill development and supportive services – tend to significantly lower rates of recidivism on a variety of measures, including a 40 percent reduction in re-incarceration for a new crime two years after joining a transitional jobs program.¹⁸ This underscores the importance of re-entry programs to increase the chance for success and redemption. Re-entry programs that prepare individuals with little work experience or marketable skills for employment, implemented at scale, have the potential to salvage generations of potentially productive members of society.

This paper considers the unique opportunities that the green economy – and green re-entry programs – can offer this chronically underserved population to find *gainful* employment necessary to escape a cycle of poverty, crime and recidivism. Jobs in the burgeoning green economy, we argue, hold the promise of not just employment prospects but greater accessibility to career jobs that pay sustainable wages.

Specifically, this paper looks at the: (1) opportunities and potential of jobs in high demand green sectors; (2) best practices of re-entry programs that can prepare people who were formerly incarcerated to become both productive workers in these sectors and contributing members of

15 Ibid.

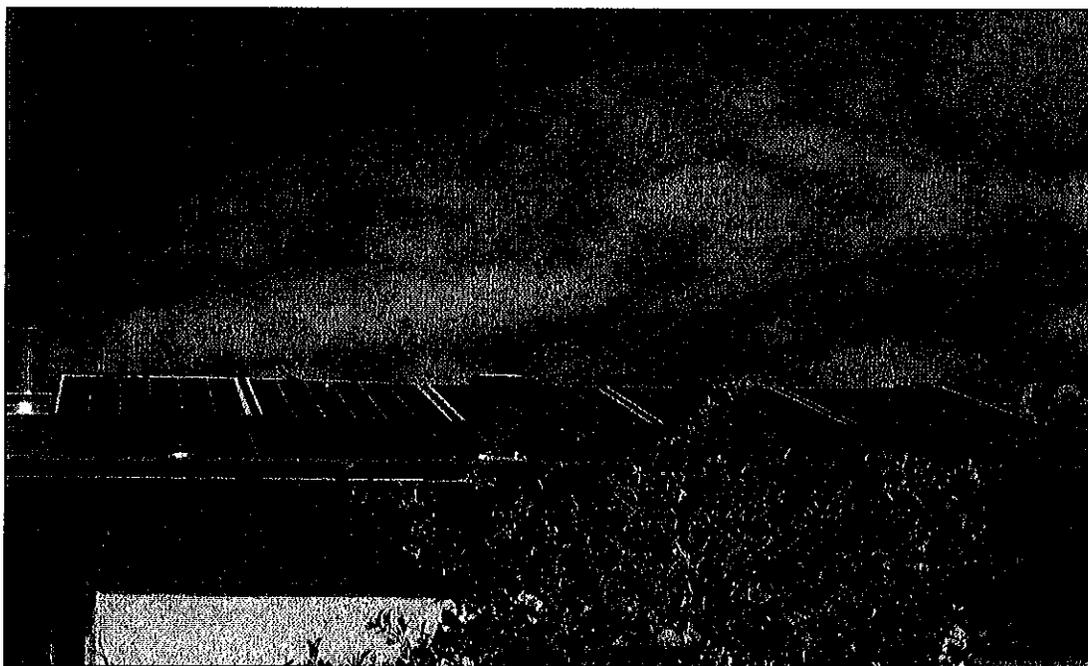
16 Rodriguez, Michelle Natividad and Maurice Emsellem. *65 MILLION NEED NOT APPLY. The Case for Reforming Criminal Background Checks for Employment*. National Employment Law Project. March 2011.

17 Ibid.

18 Ibid.

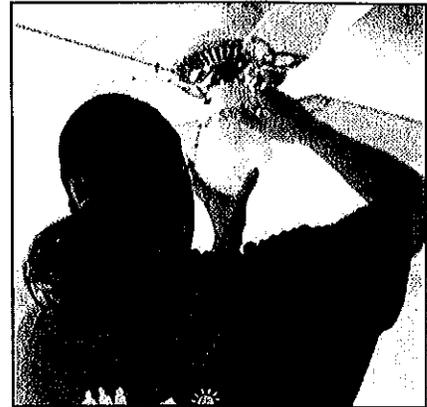
their communities; and (3) public policies that can promote fair opportunities for people with criminal histories in the emerging green economy. Case studies are included throughout to promote deeper understanding of the issues.

It is our hope that what follows can contribute to a better understanding of the needs and challenges facing previously incarcerated people and the opportunities that green jobs can offer to help them transition into career pathways for a better future.



2. WHY GREEN?

Any discussion of green jobs or the green economy immediately encounters definitional challenges: What do these terms mean? What occupations and industries do they encompass? To address these questions, the U.S. Department of Labor's Bureau of Labor Statistics (BLS) has undertaken an initiative to measure the number and growth rate of green jobs, their distribution, and the wages of workers within them. For the purposes of their analysis, BLS defines green jobs as *either* jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources, *or* jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources. By this definition, green jobs are, for the most part, existing occupations, the "greenness" of which depends on the kind and degree of economic activity.¹⁹



The BLS analysis will not be completed until next year, but a number of studies have illustrated that the green economy, while still nascent and a relatively small share of the overall economy, shows the potential to grow and become a significant source of new employment. From 1998 to 2007, according to one study, clean energy jobs grew by 9.1 percent nationally, while total jobs grew by only 3.7 percent.²⁰ In California, jobs in green economy sectors grew more than three times faster than total state employment between January 2008 and January 2009.²¹

Essential to such growth, considerable private and public investments are flowing to green technologies and industries. Global private investment in energy efficiency and renewable energy grew over four-fold to \$162 billion between 2004 and 2009.²² Though the 2008 economic recession in the US did slow venture capital investment overall, investment in clean-tech declined less than other sectors.²³ Most recently, investment in the U.S. clean energy economy grew by 51% between 2009 and 2010 to \$34 billion.²⁴

19 U.S. Department of Labor; Bureau of Labor Statistics <http://www.bls.gov/green/>

20 Pew Center on the States and Pew Environment Group. *The Clean Energy Economy: Repowering Jobs, Businesses and Investments Across America*. Pew Charitable Trusts, Washington, DC. June 2009. http://www.pewcenteron-thestates.org/trends_detail.aspx?id=53588

21 Next 10. *Many Shades of Green: Diversity and Distribution of California's Green Jobs*. Next 10. December 2009. http://www.next10.org/next10/pdf/Many_Shades_of_Green_1209.pdf

22 United Nations Environment Program. *Global Trends in Sustainable Energy Investment 2010: Analysis of Trends and Issues in the Financing of Renewable Energy and Energy Efficiency*. United Nations Environment Programme and New Energy Finance Ltd. 2010. [bnef.com/Download/UserFiles/File.../sefi_unep_global_trends_2010.pdf](http://www.bnef.com/Download/UserFiles/File.../sefi_unep_global_trends_2010.pdf)

23 Cleantech Group, LLC. "Under the hood of the second best year for cleantech yet." January 13, 2010. <http://cleantech.com/news/5494/details-second-best-year-cleantech>

24 Pew Charitable Trusts. "Who's Winning the Clean Energy Race? 2010 Edition." <http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Report/G-20Report-LOWRes-FINAL.pdf>

In terms of public investment, the American Recovery and Reinvestment Act (ARRA), committed \$93 billion to green economy activities through the end of 2010, creating or saving nearly one million jobs in sectors such as energy efficiency, renewable energy, transportation, and manufacturing. Although the impact of ARRA spending is winding down, the success of its green investments highlights the importance of the emerging green economy to the overall economy.²⁵

The momentum will continue to grow due to a host of variables that increase demand for green products and services. As the realities of climate change become more and more apparent, national, state, and local lawmakers are taking action to encourage the adoption of renewable energy and energy efficiency practices through business investment and consumer incentives. The private market is also responding. Businesses increasingly recognize the savings that energy efficiency and conservation can add to their bottom line to counter rising energy costs, and the market appeal of selling green products and services, as consumers increasingly demand them.

The potential to generate new jobs is significant, and that potential is also expected to result in a net job gain of green jobs compared to their traditional – or “grey” – counterparts due to their greater labor intensity and higher levels of domestic content in green products. As a result, clean energy investments create an estimated three to four times as many jobs as the same level of investment in fossil fuel industries.²⁶

25. Bivens, Josh, Walsh, Jason and Pollack, Ethan. *Rebuilding Green: The American Recovery and Reinvestment Act and the Green Economy*. February, 2011. Blue Green Alliance & Economic Policy Institute

26. Pollin, Robert, Heinz, James, and Garret-Peltier, Heidi. *The Economic Benefits of Investing in Clean Energy: How the economic stimulus program and new legislation can boost U.S. economic growth and employment*. June 2009. Center for American Progress and Political Economy Research Institute, University of Massachusetts, Amherst

3. GREEN JOBS: OPPORTUNITIES FOR FORMERLY INCARCERATED?

The lack of, or interrupted, educational attainment and/or work experience can hinder individuals with a criminal history for a lifetime. Transitioning back to society is already difficult enough because of the stigma facing individuals released from prison, but the lack of employment prospects too often results in a broken, unproductive work life. Companies large and small routinely deny people with criminal records the opportunity to establish themselves in the workplace. It is common to see in employment listings that people with criminal records “need not apply” for available jobs.²⁷

The promise of the green economy for the formerly incarcerated lies in its potential to help create pathways into career jobs for individuals who lack skills and work experience. Jobs created by green investments require lower formal educational credentials. Many of the jobs in industries that are driving the green economy provide unique opportunities for individuals with a criminal record. These jobs typically provide an entry to industries – such as construction manufacturing, and transportation – that have well-established career pathways and opportunities for upward advancement, while also providing better wages and benefits than other sectors of the labor market.

The majority of entry-level jobs in these industries require a high school education and some post-secondary training rather than a college degree. Many training programs exist in these sectors -- such as registered apprenticeship programs – that allow new entrants with few pre-existing skills to learn competencies on the job while they earn wages.²⁸ Moreover, while some of these occupations may have legal barriers against people with criminal records depending on the type of the offense, others have fewer such barriers.

Just as importantly, the number of jobs available will increase as baby-boomers, many of them in the utility (electricity, natural gas, and water), transportation and construction industries, approach retirement age. Anticipated retirements coupled with an expanding green economy can increase demand for new workers. Green jobs hold the potential to provide economic opportunity to those left behind by the current economy, including the formerly incarcerated. Yet, potential alone is no guarantee. Strategically focused practices, as detailed below, are necessary to actually make these jobs accessible to the disadvantaged.

27 Ibid. 32

28 Pollin, R., Wicks-Lim, J., and Garrett-Peltier, H. “Green Prosperity: How Clean-Energy Policies Can Fight Poverty and Raise Living Standards in the United States,” Department of Economics and Political Economy Research Institute University of Massachusetts, Amherst. 2009. Commissioned by Green For All and NRDC. <http://www.greenforall.org/resources/green-prosperity>

ENVIRONMENTAL LITERACY

Environmental literacy, or education around environmental and sustainability issues, is an increasingly important piece of green job training. While weatherization workers need to know how to blow insulation into an attic, they also need to know why that is necessary and be able to make the case to the customers. "Roots of Success" is a curriculum that provides that kind of knowledge. "Roots of Success" is a multi-disciplinary focus on environmental problems and solutions, incorporating the perspectives of environmental science, public health, economic development, land use planning, public policy, and social justice. Designed for youth and adults with limited academic and labor market skills, the curriculum includes an academic component that strengthens participants' skills in English (or Spanish) reading, writing and vocabulary, math, science, oral presentation, and computers. It also includes a job readiness component that strengthens labor market skills and provides detailed information on the green economy, green jobs and career pathways.

Re-entry organizations that utilize the "Roots of Success" environmental literacy curriculum in their programs speak to its transformative effect on their clients. Jess Rooks of the Osborne Association of New York, calls the program "powerful and impactful" for participants. Environmental Literacy can make a difference around critical thinking skills, particularly when participants begin to think of local solutions for large-scale

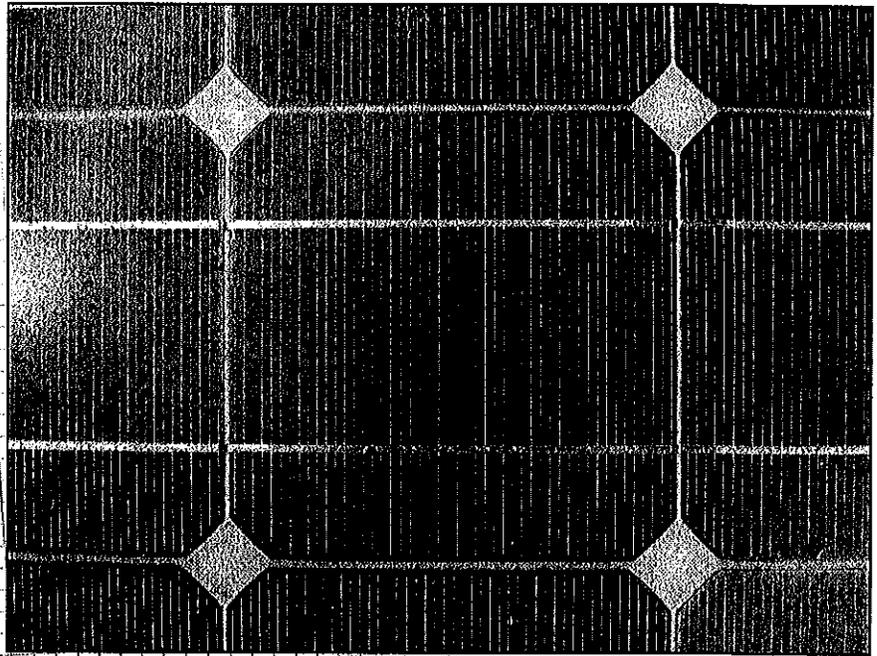


environmental problems. Though not all individuals with criminal histories will necessarily want to or be able to obtain a green job, environmental literacy training provides people with opportunities to integrate the notion of "green" into their lives, and opens up what is possible. Information about the curriculum can be found at rootsofsuccess.org.

3.1 Environmental Stewardship

Green jobs not only offer the formerly incarcerated with a potential career path, but also a greater investment in their work by virtue of serving a larger purpose. For the re-entry community, in particular, this feeling of purpose can be extremely powerful. People returning home from prison must recover from a complete loss of control over their daily lives while incarcerated, and overcome barriers to housing, employment, and other basic needs. Traditional entry-level jobs available to individuals with criminal histories tend to do little to ease the transition and help them recapture control.

The role of environmental stewardship inherent in a green job can help ease this transition by instilling pride and fulfillment in an individual's work. A green job becomes more than just a paycheck; it becomes a way for individuals to provide added value to their community and prove their commitment by contributing in a concrete way. By understanding how their job is important in a broader context, individuals coming from the prison system are able to deal more effectively with the frustrating aspects of the typical entry-level job available to them.



4. BEST PRACTICES IN GREEN RE-ENTRY

Programs geared towards the re-entry population are critical to the success of the formerly incarcerated once back in their community. To capitalize on the opportunities offered by the green economy, organizations and institutions working with the re-entry population need to develop the proper infrastructure to train and place their constituents in green career pathways. Deliberate strategies, informed by these very opportunities, will determine the success of these efforts.

Various re-entry programs are beginning to adopt innovative strategies that take advantage of the burgeoning green economy. What follows are some best practices that practitioners, working with the re-entry population, are beginning to adopt, offering individuals with a criminal record another chance to be successful in the labor market and in life.

A critical starting point for practitioners is to understand trends around growing green industries, workforce needs, and laws that may limit the types of jobs individuals with a criminal record can legally perform. Re-entry programs need to prepare individuals for jobs that exist and that don't present legal barriers. Nuanced understanding of these factors in local labor markets is critical because it can vary from state to state.

4.1 Training Opportunities During Incarceration

Time spent in prison can become an important training opportunity for the incarcerated. It is time that can be effectively used to prepare individuals for a better chance of success once they are released. Re-entry organizations, in close partnership with corrections officials, can develop basic education, along with hard (vocational) skill and soft (life and job readiness) skill training programs. Such programs can begin to address possible barriers to employment while the participant is still incarcerated.

Programs conducted within correctional facilities often face significant logistical hurdles related to unpredictable release dates of participants, difficult security clearance procedures and inconsistent participation by individuals once they are released from prison. Yet, with careful planning and close collaboration between re-entry organizations and correctional staff, these programs can prepare people for jobs or qualify them for immediate placement in a training program or transitional job upon their release.

VERMONT WORKS FOR WOMEN: IN-PRISON JOB TRAINING

Vermont Works for Women (VWW) works to address the needs of women living in Vermont's communities and prisons to earn a livable wage and to succeed in employment. VWW's programs include the Modular Home Building Program, an in-prison job-training program with a green building curriculum, where incarcerated women build Energy Star modular homes inside of Vermont's Women's Correctional Facility. The program offers year-round job training for participants in finish and frame carpentry, electrical wiring, plumbing, weatherization and roofing. Through the process of building modular homes, women receive skill-based training in green construction that is transferable to the workplace outside of prison.

The program has seen promising success. Of the participants released from prison and eligible to work, 75 percent found employment. The program has a 19 percent recidivism rate, compared to 51 percent for the general female incarcerated population.

4.2 Transitional Jobs: Immediate Work and Income Upon Release

For individuals coming out of prison, there is an immediate need for both skill development and income. Many formerly incarcerated individuals re-enter society flat-out broke and/or deeply in debt, making it challenging to participate in unpaid training programs.²⁹ Transitional jobs can help fill this gap for people by offering pathways to learn the skills they need to obtain long-term sustainable employment while earning a paycheck.

Many successful transitional jobs programs combine paid entry-level employment and on-the-job training with formal soft or hard skill training, such as adult basic education, interviewing techniques, or certification. These programs can provide individuals with relatively low education and skill levels the opportunity to learn outside the classroom environment, a place where they may have previously failed. The jobs combine wage-paying work, skill development and support to help participants become stable in their community, earn income, and transition to unsubsidized jobs or further education and training.

Social enterprises – businesses with a social mission – are well-situated to offer these transitional, and

²⁹ McLean, Rachel L. and Thompson, Michael D. *Repaying Debts*. Council of State Governments Justice Center, New York, NY. 2007. http://www.reentrypolicy.org/jc_publications/repaying_debts_full_report

later, more permanent jobs. Social enterprises fund a portion of their operations, including training and support services, through an income generating business venture. By being less reliant on public funds, the organization can often focus more on service delivery and on-the-job training for their clients rather than grant writing. Because they generate income as a result of participants' labor, social enterprises can compensate participants undergoing training for their work, helping to support them on their path to permanent employment.

4.3 Wrap-Around Support Services

Formerly incarcerated individuals also face significant barriers beyond their lack of occupational skills. Many re-enter the workforce without having fully addressed behavioral issues such as drug or alcohol addiction, mental or learning disabilities, or impulse control. Some may also face new barriers possibly resulting from incarceration including debt, homelessness, lack of reliable transportation, lack of valid

RECYCLEFORCE: A SOCIAL ENTERPRISE OFFERING TRANSITIONAL JOBS

RecycleForce in Indianapolis, IN, operates as a social enterprise. Their stated mission is two-fold: 1) become the most comprehensive recycling hub in Indianapolis, and 2) help those returning from prison to gain immediate, legitimate earnings combined with a broad array of social supports. In 2006, RecycleForce started providing transitional jobs in the emerging electronic waste recycling industry for people coming out of prison.

Participants are employed for up to six months in the recycling of electronic waste and other materials, including cardboard, plastics and aluminum. They gain marketable job skills, such as using small tools, material handling, problem-solving, loading and unloading trucks and pallets, warehouse management, and certifications in Hazardous Materials and Forklift Safety. Typically, employees work six to seven hours a day and participate for the remaining time in activities that address specific barriers to successful re-entry, such as basic education classes, job training, and drug/alcohol treatment if needed. Recent participants have earned an average of \$5,805 over the six-month period, while paying an average of \$876 in taxes.

RECYCLEFORCE: A Social Enterprise Offering Transitional Jobs, cont'd

RecycleForce contracts with the State of Indiana and the City of Indianapolis to receive their waste, and sends precious metals recovered from computers to companies in Japan. Since 2006, the program has employed 287 people and paid near \$1.75 million in wages. RecycleForce tracks participants for six months after leaving the program and continues to provide career services and support to promote job retention. Only 17 percent of participants have returned to prison, and nearly 50 percent of recent participants have transitioned into permanent jobs, including positions in retail, construction, manufacturing, recycling, non-profit, and general labor. Of those, 32 percent have retained their employment for six months and another 42 percent are still on track to do so. Transitions into permanent jobs, however, declined in 2007 and 2008 due to the worsening economic situation in Indiana.

identification, insufficient funds for training fees or proper work attire, and stringent parole or probation requirements. These barriers can limit their ability to succeed in their transitional job, training program, or job placement.

By providing a suite of wrap-around support services – such as improving access to basic needs, strengthening communication with parole and probation officers, and instruction in important life skills such as financial literacy and case management – non-profit organizations can help these individuals succeed. Support groups and mentoring programs can also provide important strategies to reinforce positive behaviors and provide a supportive environment as a person enters the workforce.

4.4 Soft Skills Development

Soft skills (personality-specific skills) such as punctuality, attendance, business etiquette, decision-making, and teamwork are critical for any job seeker. Focused skill building in this area is especially important to a successful transition for people coming out of prison. Education in financial literacy, training on completing job applications, writing resumes, and enhanced interview skills, are also critical for success. Clients must also be advised on how to answer questions about their criminal records in an open and honest way.

4.5 Industry Certifications

Gaining industry-recognized credentials and certifications is an essential step on a green career pathway that leads to higher skilled and higher paying jobs. Many jobs in green sectors require traditional construction or manufacturing job skills, but with additional green competencies. Acquiring a foundation of industry-relevant hard skills, as a carpenter or electrician for example, is essential to securing jobs in an

CIVIC JUSTICE CORPS: SOFT SKILLS FOR LIFE

Civic Justice Corps (CJC), a national initiative of The Corps Network, is the first-ever national service program to affirmatively recruit people with criminal records. CJC engages formerly incarcerated, court-involved and disconnected young people and provides them a second chance to succeed in life. It helps its Corpsmembers transition to productive adulthood and prepares them for careers in the green economy.

At the core of the CJC model is the emphasis on service learning. Corpsmembers engage in service projects that connect them to their communities, in many cases the very communities that they harmed. Service learning programs include planting trees in bare urban landscapes, weatherizing the homes of low-income neighbors, replacing sidewalks on dilapidated streets, and supporting local planning efforts to green their communities.

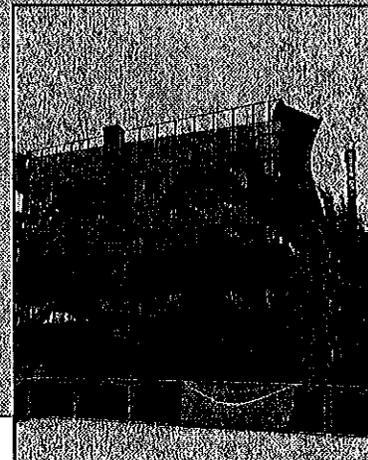
The CJC model also includes curriculum for young people with criminal histories to gain academic credentials, develop skills for work and life, and secure sustainable jobs. As part of its soft-skills curriculum, CJC provides classes on resume writing and financial literacy, teaches members the importance of punctuality and attendance, bolsters their decision-making skills and their ability to work as part of a team, coaches them on how to learn from constructive criticism, and prepares them to discuss their criminal history and lack of work history during interviews. Another key element of the curriculum is its long-term perspective, which focuses on participants not only succeeding in the here and now, but also as adults, as parents, and as life-long community members.

LA TRADE AND TECHNICAL COLLEGE (LATTTC): GREEN JOB TRAINING PROGRAMS FOR UNDERSERVED COMMUNITIES

LA Trade and Technical College (LATTTC), the oldest community college in Los Angeles and located in one of the city's most under-served neighborhoods, launched an ambitious green workforce initiative in 2006. The college offers 14 degree and certificate programs and more than 50 classes which incorporate new green content geared towards improving opportunities for entry-level employment. The school's green initiative was largely informed by input from major industries, labor, community groups, the K-16 educational system, government, and policy and advocacy groups to identify the skills sought by employers. "We did a lot of labor market research to determine the most promising occupations, namely those where public policy and technology converge with capital investment and demand," said Marcy Drummond, LATTTC VP of Workforce Education and Economic Development.

The school's certificate programs seek to meet demand in green occupational skills such as solar installation, and energy efficient heating, ventilation and air conditioning (HVAC). Credential and degree programs include: Low-emission Vehicle Technology; Sustainable Design – Architecture; Sustainable Lighting; Sustainable Land-Use & Real Estate Development; Supply Water Technology – Water Purification; Wastewater Technology; Energy Efficiency & Energy Auditing; Renewable Energy; Weatherization; and Green Building.

Based on feedback from employers, the school also helps students prepare for careers by teaching soft skills, such as punctuality and business communication.



industry like construction, which is increasingly green, and can be combined with skills that are specific to the application of green practices and technologies, such as energy efficiency, renewable energy installation, green building and deconstruction. The training programs that prepare individuals for these types of jobs allow the formerly incarcerated to obtain credentials, and hopefully certifications, that are valued by growing industries and provide workers with mobility and bargaining power in the marketplace.

There are currently many green certifications, some with more credibility than others. Green training programs need to research the different certification programs to make sure that their curriculum prepares graduates to earn certifications that are recognized and valued by the industry for which they are training people. For example, many utility programs that hire contractors to install energy efficiency measures require that the contractor and/or their employees have specific certifications to do the work. Likewise, the National Association of Homebuilders, the National Multifamily Housing Council, the U.S. Green Building Council or other green trade associations, endorse specific certifications.

Given the multitude of certification programs, some regional efforts to standardize credentials are underway with prospects at the national level, specifically in the fields of green construction, energy, and home performance (weatherization and energy efficiency).³⁰

National certifications relevant in these industries currently include:

- Leadership in Energy and Environmental Design (LEED) Certification from US Green Building Council (USGBC)
- Building Analyst, Envelope, Heating, and A/C or Heat Pump Professional Certifications from the Building Performance Institute (BPI)
- Home Energy Rater Services Rater Certifications from the Residential Energy Services Network (RESNET)
- Installation Technician and Service Technician Certifications from the North American Technician Excellence (NATE)
- National Retrofit Workforce Standards, US Department of Energy (DOE)

There are also various certifications that are not industry-specific but which offer necessary skills in the broader workplace that are transferable to other jobs. These include HAZMAT, Lead Abatement, Brown-field, and Forklift Certifications. Though not specific to green jobs, one nationally recognized program

³⁰ Dresser, L., Rogers, J., and White, S. *Greener Skills: How Credentials Create Value in the Clean Energy Economy*. Center on Wisconsin Strategy (COWS), March 25, 2010. http://www.cows.org/about_publications_detail.asp?id=499

that re-entry organizations can connect their clients with is Occupational Safety and Health Administration (OSHA) training. Workers knowledgeable in even the basic level of safety training can help lower the costs to employers for workers' compensation, making workers certified in OSHA more attractive candidates for employment.

4.6 Pre-Apprenticeship Programs

The majority of the jobs in fields like green building, deconstruction, or efficiency retrofitting, are linked to traditional training in established construction trades. Training that is grounded in an understanding of career pathways in the construction trades will align with registered apprenticeship programs, thus serving as a direct on-ramp to green jobs and careers in the building trades. As noted above, apprenticeship training programs are well suited for a formerly incarcerated or any low-income person, because they offer on-the-job training and wage payment over the course of the program. Apprenticeship programs teach individuals skills over the course of three to five years in the field and in the classroom and — in the case of union affiliated programs — graduate apprentices to union membership and journeyman status.

Many formerly incarcerated individuals will not immediately meet the minimum educational requirements to enter into apprenticeship programs (or other training programs, for that matter). Re-entry organizations can implement pre-apprenticeship programs that are designed to bridge any educational gaps that might exist, offering courses such as contextualized literacy, English as a Second Language, or computer literacy. In addition, these programs can provide funds to pay for testing, such as the Test for Adult Basic Education (TABE) or the GED, which are necessary to prove a level of basic education.

Re-entry organizations can also offer introductory classes to build skills required for a green credentialing program, and create a foundation to enable more rapid competency in required skills. Receiving training in green skills can offer an additional level of competitiveness as well. For example, weatherization is not currently a widely unionized sector but many re-entry organizations are training their participants in weatherization skills. Such training offers them an introduction to skills in the trades, such as carpentry, electrical work, and plumbing. In addition, it gives them proficiency in concepts related to certifications, such as BPI or RESNET, commonly required for home energy upgrade jobs. By developing competency in both these areas, a participant is more likely to be an attractive apprenticeship candidate. Though the current economic recession has slowed the number of new apprentices that unions bring on, more opportunities will re-emerge as the recession abates, unemployment drops, incumbent workers begin to retire, and the green economy grows.

SAFER FOUNDATION: TRANSITIONING INTO PERMANENT JOBS

The Safer Foundation of Chicago, IL, has been working for more than 30 years to help formerly incarcerated individuals successfully re-enter their communities by connecting them to employment and social services.

The Safer Foundation initiates pre-employment training with all new clients to instruct them on the culture and expectations of the workplace. Next, trained employment specialists work with clients and employers to obtain suitable job referrals and placement. Sector managers maintain current information such as job openings, skill requirements, and territory maps in specific industries. They form relationships with major employers, and create a pipeline of job openings for clients. Safer focuses on job retention by maintaining contact with both the client and the employer for one year post-placement to resolve any issues that may arise and threaten continued employment.

Safer classifies its work as a triple win, with social, business and environmental benefits. It recently launched a Green Building Deconstruction training program, a one-year training that combines unpaid soft skill development with part-time paid employment that starts at just over minimum wage and increases over time. The training instructs participants in disassembling a building in such a way that the materials (e.g., flooring, fixtures, siding, joists) can be re-used for new construction. Deconstruction is gaining attention as the green, labor-intensive alternative to building demolition, which promises to create jobs, reduce the need for new building materials, and divert over 70 percent of a building's waste from landfills. It creates a value often comparable to the cost of the deconstruction labor. Another benefit is that many of the skills needed in deconstruction are transferable to higher wage jobs in construction.

4.7 Foster Relationships with Employers

Eventually, participants in transitional jobs or training programs must move into long-term employment in the broader workplace. Re-entry organizations need to establish active relationships and work closely with employers to ensure that their constituents can find unsubsidized work. For its partners, re-entry practitioners can play a role similar to that of a human resource department. Both entities can benefit from a partnership in which employers come to trust and rely on the organization to supply workers for their workforce needs.

To foster such relationships with employers, it is critical for re-entry organizations to provide training that produces highly qualified employees for appropriate jobs and to be honest about their participants' criminal histories. These organizations need to make sure that the employer understands the nature and purpose of their program, and knows the history of their new employee. By offering that information, the employer is educated and screened for their willingness to work with clients. As an honest broker, the organization can make sure that a potential employee is the right match for a particular job by understanding which criminal backgrounds are more acceptable to the employer than others.

Organizations can also deepen their relationships with employers by creating a broad, visible partnership with the business community. After all, re-entry programs that produce highly qualified employees offer employers something that they need: a reliable pipeline of qualified workers. Re-entry organizations should consider opportunities that create a common platform between them and employers – such as inviting businesses to sit on their boards, or have business advisory councils – to better inform and align shared outcomes.

A potential outreach strategy for re-entry organizations is to provide employers information on possible financial incentives. Employers of people with criminal histories may meet eligibility requirements and receive financial, such as the federal Work Opportunity Tax Credit. Providing employers with information, and helping them apply for subsidies, can establish an initial relationship with employers, provide an opportunity to educate them, and help them overcome the reluctance to hire a worker with a criminal history.

4.8 Retention Services

Because of the many barriers that formerly incarcerated individuals face in the job market, ongoing support is key to ensuring that job placements are successful. Many re-entry organizations check in regularly with employers and provide ongoing services to participants to support their success in their new career. Job retention services may include mentoring, support groups, life-skills courses, or help with immediate needs as they arise. As such, organizations can serve as a helpful resource to both the employer and the employee, the organization can help resolve issues before they become serious problems that lead to a loss of employment.

DETROITERS WORKING FOR ENVIRONMENTAL JUSTICE: KEEPING UP WITH CERTIFICATION

Formed in 1994, Detroiters Working for Environmental Justice (DWEJ) addresses the disproportional burdens faced by people of color and low-income residents in environmentally distressed communities, including people with criminal histories. With various partners, DWEJ implements training programs that prepare people for jobs in the emerging green economy, covering fields such as weatherization, computer-aided design (CAD), deconstruction, geothermal systems, green landscaping, environmental site assessments, and phytoremediation (engineered systems that use the properties of plants to remove pollutants from soil, water and air).

DWEJ's Green Jobs Training Program empowers participants to become environmental activists and pursue jobs in emerging green industries. It also serves as a resource for businesses by providing a skilled workforce trained to prevent and reduce environmental degradation. During a state-certified 12-week training course, program participants receive training in lead, mold and asbestos abatement; best practices in green industry; environmental assessment; and, EPA-approved hazardous waste operator training. Once trained, DWEJ helps graduates maintain certifications, providing refresher courses, as needed, if they have not yet found a job or if they've been laid off.

5. POLICY AND ADVOCACY

Individuals transitioning out of the criminal justice system will always face greater barriers to entry when looking for employment than others with no such history. To ensure a greater degree of success, the work of re-entry practitioners must also be complemented with policy and advocacy efforts. In addition to building effective infrastructure, policy levers are critical to connect the re-entry population to the workforce and to in-demand jobs.

Advocacy is what drives policy changes that benefit the formerly incarcerated. Organizations serving the re-entry population can better fulfill their mission by creating greater awareness around the needs of the re-entry community. Focusing on success stories and messaging around the value to employers of working with a supported, well-trained population can reduce the stigma that those with criminal histories suffer from in the job market. Finding allies — including business, government, union and other community-based leaders — who will publicize the obstacles facing the re-entry population, and the value of re-entry programs, can increase the effectiveness of advocacy in support of policies that provide opportunities for people with criminal records.

5.1 Policies that Enhance Labor Supply

This paper has described many innovative strategies that have been successful in transitioning people into employment and reducing recidivism. Policies that allow these types of programs to expand their reach: (1) facilitate the strengthening of career pathways; (2) increase the opportunities for organizations to collaborate to offer a full suite of services; and (3) allow other programs to replicate best practices in more communities so that a greater number of participants can benefit.

These policies are discussed below.

5.1.1 Re-Prioritizing Goals of Existing State Correctional Programs

In many cases, expanding the impact of existing programs simply requires re-prioritizing their goals or shifting the guidelines around how goals are achieved. For example, state departments of correction receive funding to train prisoners while incarcerated. Yet, many of these programs provide little in the way of marketable skills to help individuals gain employment once they are released.³¹ By encouraging these programs to partner with non-profit organizations and community colleges operating within cor-

31 The Working Poor Families Project. Strengthening Correctional Education for Adults. Policy Brief, Summer 2009. <http://economicmobilitycorp.org/uploads/policybrief-summer09.pdf>

rectional facilities, as well as in communities, individuals who start training while in prison can continue to develop skills without interruption upon release.

If states allow those organizations to incorporate a paid, on-the-job training component for participants (perhaps after release from incarceration or after achieving a certain competency in the skills trained), they can increase the positive impact of the program. Participants can continue their training program as they transition out of prison, which provides them with consistency and support during an extremely difficult process. With an emphasis on green training, participants can also benefit from acquiring skills in sectors that are expanding and accessible, and that may offer a strong alternative to the cycle of unemployment and re-imprisonment that so many formerly incarcerated individuals face.

5.1.2 Aligning Funders' Needs with Innovative Strategies

As programs implement innovative strategies to provide high quality training, on-going employment and support to their participants, both public and private funders sometimes have a difficult time keeping up. Social enterprises, in particular, face a challenge resulting from their hybrid model, which allows them to serve their social mission while also employing clients in transitional jobs. These hybrid enterprises run into serious challenges in attracting private investment capital as their social mission prevents them from earning profits that are attractive to the for-profit investment community. Yet, philanthropic and public grant-making organizations are often put off that these enterprises charge for the product or services that they employ clients to deliver. Funding agencies should work closely with re-entry organizations that employ this model to ensure that their funding requirements or traditional approaches do not hinder the success of these programs.

Additionally, organizations that work with low-income and low-skilled populations may avoid admitting participants with very high barriers to success (including the re-entry population) into training programs or classes out of fear that it will negatively affect the outcomes that they must report to funders. Tracking outcomes is extremely important, but metrics should take into account the populations being served in order to appropriately gauge the efficacy of a program. Funding programs should incorporate realistic accountability standards to ensure that organizations receiving funding to work with individuals with barriers to employment are not discouraged from working with the re-entry population. Outcome expectations should be appropriate to this population's level of need and risk.

5.2 Policies that Create Labor Demand

In addition to preparing the workforce with the skills necessary to add value in green sectors, government policy must support emerging green industries if they are to fully achieve their potential. The burgeoning green economy shows much promise, but like innovation in other industries, government must play an integral role in driving widespread demand for green products and services. Public policies must also ensure that the jobs that result from this burgeoning economy are accessible to people with barriers to employment, including formerly incarcerated people, and that these career-track jobs help rebuild the diminishing middle class.

5.2.1 Fulfilling the Potential of the Green Economy

Consumers are beginning to recognize the value of 'going green' such that the demand for green products and services is increasing. Private industry understands the value of innovative new technologies that create new markets and satisfy this growing consumer demand. However, like any newly emerging industry, the adoption of nascent green products and services require incentives to help it grow. Businesses are wary of introducing new products and services to the market if there is not stable, long-term demand.

Government can provide incentives to elevate the value of green products and services to create the necessary demand. Renewable energy and energy efficiency standards are the most broadly used and impactful policy mechanisms to create such demand. But there are more modest yet effective policies that can be utilized, as well. For example, the Department of Energy (DOE) recently launched HomeScore, a simple way to communicate the efficiency of one's home.³² In doing so, HomeScore provides homeowners, and markets, with a way to value reduced utility costs, and increased comfort and health benefits that oftentimes accompany an efficient home, and to reflect those benefits in the price of the home.³³ Through programs like this, and instruments such as green product rebates and tax incentives, the government can create market signals that encourage green job creation. Similarly, product take back and stewardship laws that require manufacturers and communities to act with environmental responsibility with respect to materials management can generate additional demand for recycling businesses.

5.2.2 Community Workforce Agreements to Spur Opportunities

Government, industry, labor and community-based organizations can come together to create opportunities for individuals with criminal records by providing them access to good jobs on local development

32 US Department of Energy. "Vice President Biden Launches Home Energy Scoring Program," Energy.gov, November 9, 2010. Web. 27 May 2011 <http://www.energy.gov/news/9784.htm>

33 Newport Partners, LLC. "Report: Motivating Home Energy Improvements Focus Groups for the U.S. Department of Energy." Web. 23 May 2011. http://apps1.eere.energy.gov/buildings/publications/pdfs/homescore/doe_fg_report.pdf

projects. The use of Community Workforce Agreements (CWAs) on large construction projects can offer traditionally disadvantaged and underrepresented populations access to union apprenticeship programs through local hiring provisions.

A CWA represents the outcome of negotiations among the property owner or end-user of construction services, the general contractor(s), and building trades unions that establishes the terms and conditions of employment for a specific development project. They typically include agreements among all parties on wage and benefits levels, the hiring process, safety provisions, skills training that will be provided to new workers on the job-site, as well as scheduling, communication strategies and dispute resolution, among other things.

CWAs can be an important vehicle for the formerly incarcerated to gain access to training opportunities and career pathways into stable employment. Re-entry organizations and institutions that are part of a broad coalition of stakeholders can benefit from these arrangements. For instance, a comprehensive CWA negotiated by the Community Redevelopment Agency of Los Angeles, in collaboration with the Los Angeles Alliance for a New Economy (LAANE) and the Los Angeles County Federation of Labor, requires that most publicly funded development projects promote local-hiring standards. The CWA targets "disadvantaged workers", including anyone who has a "criminal record or other involvement with the criminal justice system."³⁴

The inclusion of local hiring provisions and apprenticeship ratios can help mitigate some of the discriminatory hiring practices historically associated with the construction industry. Today, perhaps a bigger barrier is the high unemployment rates in the sector. Unemployment in the construction industry today remains almost double³⁵ the national unemployment rate.³⁶

Public policy can require or encourage the use of CWAs on publicly financed development projects. One such opportunity is represented by multi-year transportation authorization legislation which, if Congress ever gets serious about passing it, will commit billions of dollars to transportation infrastructure projects, creating badly needed construction jobs for both incumbent construction workers currently "on the bench" and new workers.

34 *Summary: CRA/LA Construction Careers and Project Stabilization Policy*, Revised 11/19/2008. www.crala.net/.../Construction%20Careers_Goals%20and%20Summary.pdf

35 *Maddux NewsWire, Tampa Bay's Latest Business News*. "Construction Industry Adds 5,000 Jobs Between March and April, as Sectors Unemployment Rate Falls to 17.8 percent." May 8, 2011. <http://madduxpress.com/2011/05/08/construction-industry-adds-5000-jobs-between-march-and-april-as-sectors-unemployment-rate-falls-to-17-8-percent-25206/>

36 Bureau of Labor Statistics, US Department of Labor. "News Release: The Employment Situation, 2011." USDL-11-0622, May 6, 2011. <http://www.bls.gov/news.release/pdf/empisit.pdf>

5.2.3 High Road Agreements Can Deliver For Targeted Populations

In situations where CWAs are not applicable or feasible (e.g. there is not an identifiable end-user of construction services, industry), workforce development, community-based organizations, and government stakeholders can still work together to ensure job quality and equitable access to opportunity in emerging green sectors by developing High Road Agreements.

High Road Agreements are based on a combination of requirements, incentives, and supports. Outcome tracking and ongoing adjustment of strategies are important features. High-road strategies include wage and benefit minimums, a local and targeted hiring component, and guidelines around on-going training opportunities in order to increase skills and build career pathways for employees of participating contractors. High Road Agreements reflect a consensus by stakeholders that a trained, qualified and adequately compensated workforce delivers higher quality services to the customer and reduces costs to the employer.

Oftentimes, targeted hiring requirements spur partnerships between industry and training entities working with vulnerable populations. Through the involvement of employers, training providers can ensure their curriculum imparts the required skills to their participants to the benefit of everyone involved. The workforce receives applicable skills to increase their marketability in the job market, while the employer reduces the time and cost spent in recruiting and training employees with little previous experience. In successful high-road programs, employers report significantly reduced costs due to decreased turnover, less recruiting time, and smaller amounts of time spent training employees.³⁷

As part of the targeted hiring component in high-road programs, stakeholders can set goals and establish strategies for increasing opportunity for individuals with criminal histories. In Portland, Oregon, for example, an application for contractors to participate in a high-road home retrofit program gave additional consideration to those that employed formerly incarcerated individuals.³⁸

5.2.4 Legislative Efforts to Prohibit Blanket Discrimination

In most states, people with criminal records – including those with arrest records but no convictions – can be excluded from employment even if they pose no risk to the business or the general public. In addition, people with criminal records are often barred from obtaining many professional licenses.³⁹ It

37 Statement by John Mello, Green Projects Director for Baltimore Center for Green Careers, on Green For All's High Road Affinity Call for Better Buildings. March 16, 2011.

38 See this site for specific information on Portland's program as well as general information on High Road Agreements. <http://www.greenforall.org/what-we-do/building-a-movement/community-of-practice/citywide-retrofitting-resources#hrs>

39 Legal Action Center. After Prison: Roadblocks to Reentry. Legal Action Center, 2009. Web. 26 May 2011 <http://www.lac.org/roadblocks-to-reentry/index.php>

is important to foster and maintain public commitment to keeping risk-appropriate jobs within green industries available to individuals with criminal histories. State laws can be reformed to prohibit blanket discrimination against anyone with a criminal record.⁴⁰

Many employers may be afraid to hire people with criminal records because they do not want to be held liable if the employee commits a new crime, and they do not know how negligent hiring laws⁴¹ might affect them. According to the National H.I.R.E. Network,⁴² "ordinarily, an employer's reasonable efforts to check and consider a prospective employee's background will generally satisfy the legal requirements and eliminate the risk of liability on the employer's part."⁴³ The clarification of state negligent hiring laws and the elimination of employer liability except in clearly defined cases will help allay employer fears about hiring this population.

Efforts such as Ban the Box,⁴⁴ which seek to eliminate questions about past convictions on initial public employment applications, can help ensure that people with criminal records are considered for employment. Additionally, public agencies can partner with re-entry organizations or their employer partners to get contracts and ensure that jobs exist for this population. In the absence of such an entity, government agencies can specifically encourage private contractors to hire people with criminal records into risk-appropriate jobs in order to receive government contracts.



40 Ibid. 15

41 Negligent hiring is a claim made by an injured party against an employer. It charges that an employer knew or should have known about the employee's background because, if known, uncovers a dangerous or untrustworthy character.

42 H.I.R.E. stands for Helping Individuals with criminal records Reenter through Employment.

43 National H.I.R.E. Network. *Negligent Hiring Concerns*. Legal Action Center. Web. 2 December 2010 http://www.hirenetwork.org/negligent_hiring.html

44 Yes! "Ban the Box for a Fair Chance." June 8, 2011. <http://www.yesmagazine.org/issues/beyond-prisons/ban-the-box-for-a-fair-chance>

6. CONCLUSION

The job market is unforgiving to individuals with a criminal record. In any given three-month period, only slightly more than a third of the formerly incarcerated are actually employed.⁴⁵ Their second chance to become productive workers may come in the form of the green economy. The *nature* of many emerging green jobs provides individuals with criminal records unique opportunities. Many of these occupations tend to provide well-established career pathways for individuals with limited education and little work experience. Training programs also exist so that new entrants can achieve competency rapidly. Moreover, these are jobs concentrated in sectors that have fewer legal barriers against people with criminal records, depending on the type of the offense.

Yet, the promise of the green economy alone is not enough. Innovative strategies are required to help individuals returning from prison become productive workers and members of their communities. It is critical to identify now the best practices of green re-entry programs that can take advantage of the early stages of the greening economy, and to put in place the proper infrastructure. Organizations need to develop effective programs and strategic partnerships that can successfully prepare their clients for long-term placement into green career pathways.

Organizations must also advocate for their clients by creating greater awareness around the needs of the re-entry population. These efforts can widen the number of employers willing to hire individuals with criminal records, and rally a broad coalition of stakeholders to advocate on behalf of policies that expand access to those jobs. Unnecessary barriers facing the formerly incarcerated — that have nothing to do with public safety — need to be dismantled.

Where possible, these barriers should be affirmatively replaced by policies that help create family-supporting jobs for the re-entry population, such as targeted hiring of disadvantaged and underrepresented groups for private and public development projects. As the green economy gains momentum and economic recovery takes hold, stakeholders need to position themselves to ensure that some of the newly created jobs will be made accessible to individuals with criminal records, providing them with purpose and a paycheck.

⁴⁵ Holzer, H. Collateral Costs: The Effects of Incarceration on Employment and Earnings Among Young Men. Discussion Paper No. 1331-07. Madison, WI: Institute for Research on Poverty. October 2007.

7. RESOURCES

7.1 Organizations

Legal Action Center	http://www.lac.org/
Urban Institute Justice Policy Center	http://www.urban.org/center/jpc/index.cfm
Pew Charitable Trusts	http://www.pewtrusts.org/
The HIRE Network	http://www.hirenetwork.org/
National Transitional Jobs Network	http://www.heartlandalliance.org/ntjn/
Roots of Success	http://www.rootsofsuccess.org/

7.2 Cited Re-Entry Programs Models

Corps Network's Civic Justice Corps Program	http://www.corpsnetwork.org/
OpenDoors	http://www.opendoorsri.org/
The Osborne Association	http://www.osborneny.org/
Safer Foundation	http://www.saferfoundation.org/
Vermont Works for Women	http://www.vtworksforwomen.org/
RecycleForce	http://www.recycleforce.org/
Detroiters Working for Environmental Justice	http://www.dwej.org/
Center for Employment Opportunities	http://www.ceoworks.org/

7.3 Policy Papers

Feldbaum, Mindy, Frank Greene, Sarah Kirshenbaum, Debbie Mukamal, Megan Welsh and Dr. Raquel Pinderhughes. *The Greening of Corrections. Creating a Sustainable System*. The National Institute of Corrections, NIC Accession Number 024914, March 2011.

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National Employment Law Project, PolicyLink, Ella Baker Center for Human Rights. *Expanding Opportunity: Employing the Formerly Incarcerated in the Green Economy*. July 2010. <http://nelp.3cdn.net>

Pew Center on the States. *One in 31: The Long Reach of American Corrections*. The Pew Charitable Trusts, Washington, DC, March 2009. http://www.pewcenteronthestates.org/news_room_detail.aspx?id=49398

Pew Center on the States. *One in 100: Behind Bars in America*. The Pew Charitable Trusts, Washington, DC. 2008. http://www.pewcenteronthestates.org/report_detail.aspx?id=35904

Pew Center on the States, "Clean Energy Economy: Repowering Jobs, Businesses, and Investments Across America." Pew Charitable Trusts, Washington, DC, June 2009.

http://www.pewcenteronthestates.org/report_detail.aspx?id=52872&WT.rss_ev=f&WT.rss_f=Topics%20RSS&WT.rss_a=Clean%20Energy%20Economy&WT.z_contenttype=Report

Rodriquez, Michelle Natividad and Maurice Emsellem. *65 MILLION 'NEED NOT APPLY' The Case for Reforming Criminal Background Checks for Employment*. National Employment Law Project, March 2011.

7.4 Members of Green For All's National Working Group on Green Re-Entry

For more information on the working group, please see:

<http://www.greenforall.org/what-we-do/building-a-movement/community-of-practice/working-groups>

Center for Employment Opportunities (CEO) | Marta Nelson

Civicorps Schools | Joseph Billingsley

Civic Works | John Mello

Construction Apprenticeship & Workforce Solutions, Inc. (CAWS) | John Gardner

Detroiters Working for Environmental Justice | Kinnus Paul

Goodwill Industries of Greater Detroit | Keith Bennet

Fresno Local Conservation Corps | Marcelino Salazar

Limitless Vistas | Matilda A. Tennessee

Los Angeles Youth Opportunity Movement | Martin Flores

Mon Valley Initiative | Jim Reid

National Transitional Jobs Network | Amy Rynell

OpenDoors | Sol Rodriguez

Osborne Association | Jessica Rooks and John Valverde

Rubicon Programs, Inc. | Rob Hope

Safer Foundation | Jodina Hicks

Seattle Jobs Initiative | Dave Trovato

Vermont Works for Women | Jayne Sheridan

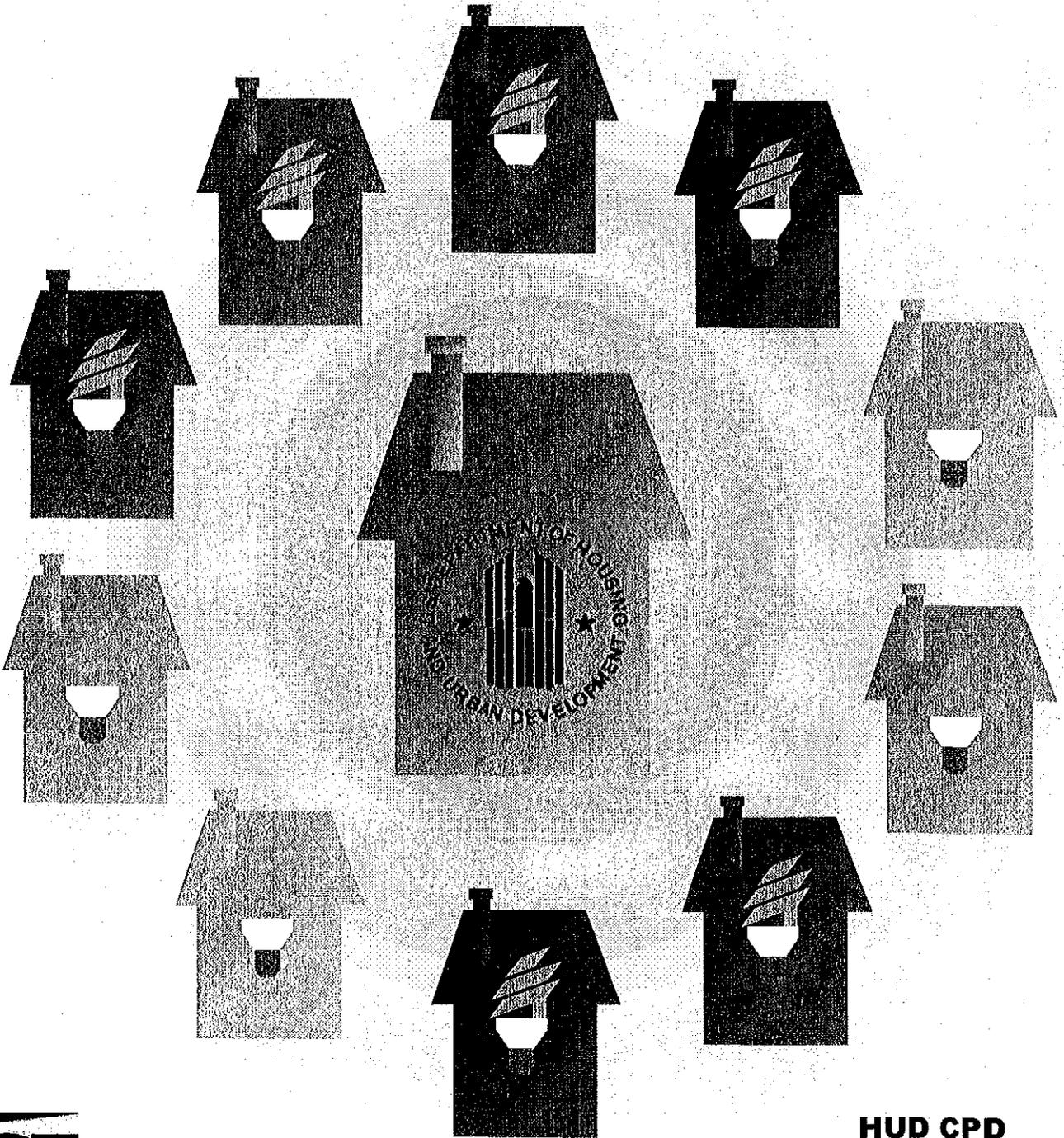
Workforce, Inc. | Gregg Keesling



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Incorporating Energy Efficiency into HOME-Funded Affordable Housing Development Manual



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HUD CPD: San Francisco Regional Office
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HOME-Funded Affordable Housing
Development

Manual

January 15, 2008



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HUD CPD: San Francisco Regional Office

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Manual

January 15, 2008

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Introduction

ICF International created this manual as a cooperative project with the U.S. Department of Housing and Urban Development (HUD), Office of Community Planning and Development (CPD San Francisco Regional Office) to provide Participating Jurisdictions in the San Francisco regional territory (including northern California, Nevada, and Arizona) a resource for increasing the environmental quality and energy performance of buildings assisted through HUD HOME program.. The manual provides information about energy efficiency and green building and how to incorporate those practices into HOME funded affordable housing.

Why Energy Efficiency

Designing for energy efficiency has become a focus in the last 10 years due to the growing realization of both the cost of using energy, and the damage to the environment that fossil fuels and non-renewable sources of energy have wrought throughout the world. Over the last 5 years, volatile energy prices, a slowed economy, and increased cost of living, have caused greater numbers of people to spend an increasing percentage of their income on utility bills.

According to the National Energy Policy, between 1998 and 2000, average household spending on energy rose by more than 26 percent and consumed a greater share of income, increasing from 3.8 percent to 4.8 percent of after tax earnings. The portion of household annual income spent by low-income families is several times this average. According to "The Cold Facts: The First Annual Report on the Effect of HOME Energy Costs on Low-Income Americans" the energy burden of households living on low wages, disability payments, or a fixed income like Social Security, accounted for approximately 19.5 percent of their annual income.

To address the energy crisis that low-income households face, both national policy and local efforts are focusing on the reduction of energy use and cost by building energy efficient, affordable housing. Even slight modifications in building design can create huge reductions in the amount of energy that buildings require for their operations. Realizing these reductions on a wide scale not only dramatically reduces the amount of energy on which the built environment depends, it can create savings for the property owner and residents of the building as well. In fact over time, the measures implemented to create energy efficient buildings often more than compensate for their cost of installment in reduced energy bills and maintenance needs. Additionally, these measures frequently increase the value of the building, improve indoor environmental quality, and generate broader public environmental and fiscal benefits.

Purposes of the Manual

The primary purpose of this manual, *Incorporating Energy Efficiency into HOME-Funded Affordable Housing Development*, is to provide technical and operational advice to participating jurisdictions(PJs), community housing development organizations (CHDOs), and subrecipients of HOME-funding to incorporate ENERGY STAR and other energy efficiency and green building practices into affordable housing.

This manual combines information about energy efficiency measures with information about creating affordable housing using the HOME program so that PJs may make informed decisions about which efficiency measures apply to the context in which they work. It describes ENERGY STAR construction guidelines for new or substantially rehabilitated buildings as well as energy efficiency strategies and measures that can be readily incorporated into HOME-funded rehabilitation projects. Furthermore, this manual addresses the particular ENERGY STAR requirements and energy efficiency opportunities applicable to organizations in northern California, Arizona, and Nevada. The manual presents information on the efficiency and cost benefits of particular measures, describes how to calculate and estimate the benefits associated with investments in energy efficiency, in order that PJ staff may convey that information to developers and effectively remove

obstacles to incorporating efficiency measures in a project. Finally it references tools and resources that can be employed to facilitate energy efficiency decisions and investments in affordable housing.

Audience

This manual targets those administering the Home Investments Partnership Program (HOME) and attempts to communicate the benefits of incorporating efficiency measures into their projects and the projects they sponsor. HOME administrators are not expected to be experts in the technical components of building and this manual approaches energy efficiency from a non-technical, policy level angle. Projects eligible for efficiency measures span the entire range of HOME eligible activities including acquisition and site improvements, new construction, reconstruction or rehabilitation, conversion, demolition, and homeownership. Within these activities, energy related improvements are eligible uses of HOME funds. The manual includes several sections that offer guidance on creating programs to encourage the adoption of energy efficiency measures as well as describing tools that can aid in determining what measures should be incorporated into a project and what that measure will translate to in terms of energy and cost savings over time. While all these measures are eligible for HOME funding, they can be implemented easily into any other residential project as well.

Organization of the Manual

Part 1: Energy Efficiency Strategies and Approaches for Home-Funded Projects

Part 1 consists of “timeless” information providing an overview of energy efficiency, with a particular focus on the ENERGY STAR program in HOME projects, and resources for determining efficiency priorities and implementing efficiency programs. It is useful for PJs that are interested in understanding the ENERGY STAR program; incorporating energy efficiency requirements into their existing HOME activities, creating their own priorities about efficiency measures to incorporate into program requirements/guidelines; as well as finding and working with existing partners to reduce the barriers of incorporating efficiency measures into projects.

The manual begins with a description of the ENERGY STAR New Homes program for new construction and gut rehabilitation projects. The next chapter focuses on new construction projects and summarizes the major building components that the ENERGY STAR guidelines address and the process for labeling a building ENERGY STAR. This section offers recommendations about how a local government could require or encourage developers using federal funds to incorporate ENERGY STAR into their new construction and major rehabilitation projects. Specific strategies to facilitate the achievement of these goals and sample language for RFPs and written guidelines are included in this section as well.

Chapter 3 addresses efficiency in existing units, which are not eligible for the New Homes program, but may benefit from the incorporation of efficiency measures regardless. Like the previous chapter, this chapter focuses on how a government can require efficiency measures in its HOME program and how to incorporate strategies to facilitate a positive response from developers. Because no set prescriptive already exist, this chapter identifies measures that are commonly considered according to the scope of the project being undertaken.

Even with the wide spread interest in energy efficiency due to concerns about climate change, developers might look at energy efficiency standards with skepticism or even resistance, because of initial cost implications. In response to this, much of this manual emphasizes how local governments can determine for themselves what measures are appropriate for a project, based on the community’s unique context and the project’s specifications. Three tools, of increasing specificity and complexity, are provided to allow

PJs to determine the efficiency measures they want to achieve in the projects they support. These tools offer information about the energy and cost savings associated with different efficiency measures and so provide a resource for PJ's as they work with developers to show the benefits of the measures and facilitate developer investment and willingness to incorporate these measures. By understanding why efficiency measures are necessary and how much they can benefit a project, government can better communicate the need for these measures to developers.

The final section of Part 1 of this manual describes programs that can be used to overcome obstacles to incorporating efficiency measures. Many of these programs can work in conjunction with the HOME Program to leverage the financial or technical resources necessary to successfully facilitate ENERGY STAR and other efficiency programs. The section closes with a brief overview of initiatives that compliment energy efficiency by promoting other aspects sustainability.

Part 2: Northern California, State of Nevada, and State of Arizona Specific Energy Efficiency Recommendations

Part 2 consists of specific information about efficiency measures that are currently appropriate in the Northern California HUD Field Office territory (Northern CA, AZ, and NV), broken out according to universally applicable measures and those that are sensitive to weather patterns. These recommendations were created using the tools described in the manual and serve as a point-in-time checklist of measures to consider for agencies that would like to implement efficiency measures into their guidelines. This section begins with measures that apply to all communities without regard to the climatic conditions within that community. These recommendations are not weather-sensitive and should be considered by any community interested in incorporating energy efficiency into its programs. Following this section, an additional section of weather sensitive recommendations has been compiled for 4 regional climates prevalent within the Northern California HUD Field Office territory. These microclimate examples offer a comprehensive "snapshot" of the energy and cost savings that different measures could obtain in these respective climate zones. Communities within these climate zones can use this information into the foreseeable future to communicate with developers about the potential savings different measures might allow.

Getting Started

This manual was designed to allow for the greatest amount of flexibility and it is useful for a variety of purposes. Each of these sections may be the entirety of the information a particular PJ is interested in and although they build upon one another, they can also function as "pull-outs" to provide comprehensive information about the subject matter that section covers. As such, depending on the goals of the reader, different sections will become more relevant.

**Incorporating Energy Efficiency into HOME-Funded Affordable Housing Development
Introduction**

If your goal is to understand:	See Section(s):
Part 1	
The ENERGY STAR program	1
Measures and processes associated with the ENERGY STAR New Homes program for <i>new construction projects</i>	2.1 – 2.2
How to incorporate ENERGY STAR requirements into a HOME new construction / major rehabilitation program	2.3
Creating incentives for efficiency measures in a new construction / major rehabilitation program	2.3.2
Specific efficiency measures to incorporate into an existing HOME affordable housing program	3.1, 3.2.1, 3.3
How to incorporate efficiency requirements into an existing HOME moderate / minor rehabilitation program	3.2
Benefits of incorporating efficiency measures into multi-family buildings	3.1.1
Creating incentives for efficiency measures in a moderate / minor rehabilitation program	3.2.2
How to estimate the energy and cost savings of incorporating efficiency measures into a rehabilitation project	3.1.2, 4.1-4.3
To estimate the energy and cost savings specific efficiency measures could create in a specific new construction or rehabilitation project	4.3
The roles of partners for a program focused on incorporating efficiency measures into an affordable housing project	5
Programs focusing on sustainability other than energy efficiency	6-7
Part 2	
Recommendations about non-weather sensitive efficiency measures to consider for projects	2
Recommendations about weather sensitive efficiency measures to consider for projects in a specific climate zone	3

Additionally, if an agency is only working on particular types of projects, some sections will have more relevance to specific kinds of projects. The following Sections are most relevant if an agency is working on:

- **New Construction Projects**

- Section 2: Efficiency in New Construction and Major Rehabilitation Projects
- Section 3.3: Additional measures for HOME-funded Projects
- Section 4.3: The DEER Database
- Section 5: Partners to Leverage Resources
- Part 2: Northern California, State of Nevada, and State of Arizona Specific Energy Efficiency Recommendations

Incorporating Energy Efficiency into HOME-Funded Affordable Housing Development
Introduction

- **Major Rehab Projects**
 - Section 2: Efficiency in New Construction and Major Rehabilitation Projects
 - Section 3.3: Additional measures for HOME-funded Projects
 - Section 4: Tools for Calculating Savings
 - Section 5: Partners to Leverage Resources
 - Part 2: Northern California, State of Nevada, and State of Arizona Specific Energy Efficiency Recommendations
- **Moderate / Minor Rehab Projects**
 - Section 3: Efficiency in HOME Projects for Existing Housing
 - Section 4: Tools for Calculating Savings
 - Section 5: Partners to Leverage Resources
 - Part 2: Northern California, State of Nevada, and State of Arizona Specific Energy Efficiency Recommendations
- **Homebuyer Assistance Projects**
 - Section 3.2: Incorporating Energy Efficiency into HOME Guidelines for Existing Housing
 - Section 5: Partners to Leverage Resources.

If the project(s) a reader is working on fall within any of these categories, or the reader has a specific interest when reading this manual, these sections may serve as stand alone guides to the above topics, with the rest of the manual serving as supplemental or explanatory material.

Incorporating Energy Efficiency into HOME-Funded Affordable Housing Development
Introduction

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Part 1:
ENERGY EFFICIENCY
STRATEGIES AND APPROACHES
FOR HOME FUNDED PROJECTS

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1. Achieving Efficiency with ENERGY STAR

The ENERGY STAR program is considered the benchmark or prevailing standard for energy efficiency design and performance. It is a joint program between the Environmental Protection Agency (EPA) and Department of Energy (DOE) and constitutes the U.S. government-backed symbol for energy efficiency. The ENERGY STAR mark identifies new homes and products that are energy efficient and offer better features, quality, and performance. ENERGY STAR building standards and products are incorporated in all significant Green Building standards and is a cornerstone of HUD's national Energy Action Plan. Through a Memorandum of Understanding signed in September 2002, HUD works with the EPA and DOE to expand the use of ENERGY STAR products in projects financed through HUD programs, such as CDBG and HOME. The agreement also promotes the construction of new ENERGY STAR qualified homes through HUD programs.

New homes constructed with HOME funds must meet HUD standards, the 2004 International Energy Conservation Codes (IECC), or a higher standard adopted by the jurisdiction. Beyond these standards, HUD encourages HOME Participating Jurisdictions (PJs) to incorporate ENERGY STAR qualified products and practices whenever possible in conducting major rehabilitation projects or constructing new housing and to meet ENERGY STAR Qualified New Home guidelines within their development programs.

1.1. What Is ENERGY STAR?

EPA introduced ENERGY STAR as a voluntary labeling program designed to identify and promote energy-efficient products to reduce greenhouse gas emissions in 1992. The label was then extended to additional office equipment products and residential heating and cooling equipment. In 1996, EPA partnered with DOE for particular product categories. Today, the ENERGY STAR label is on more than 50 types of products, including major appliances, office equipment, lighting, home electronics, and even new homes and commercial and industrial buildings. Products with the ENERGY STAR label deliver the same or better performance as comparable models while using 10% to 50% less energy.

In 1995, ENERGY STAR expanded its scope from certifying energy efficient products to energy efficient buildings by implementing the ENERGY STAR Qualified New Homes Program. The New Homes program encourages builders to construct single family and multifamily dwellings (less than 3 stories) that use at least 15% less energy than the standard design required by the 2004 IECC Standards in Arizona and Nevada or Title 24, the California Energy Efficiency Standards in California. To receive the ENERGY STAR New Home label, builders are free to select the energy efficiency features used in a project to achieve the necessary standard so long as a special certified inspector verifies that the building meets ENERGY STAR guidelines.

The ENERGY STAR program was designed to easily overlay the normal development process and already has an infrastructure formed around it for implementation. **In order to adopt ENERGY STAR guidelines, a PJ only needs to direct developers to conform to ENERGY STAR standards in HOME construction guidelines and provide evidence of doing so.** Implementing an ENERGY STAR Qualified New Homes requirement entails limited administrative oversight.

2. Efficiency in New Construction and Major Rehabilitation Projects

Energy Star standards are NOT mandatory. However, PJs are encouraged to support projects that incorporate ENERGY STAR guidelines for construction. In the case of new construction and gut rehab, the New Homes Program offer clear guidelines that apply directly to projects and PJs can easily incorporate into HOME Program policies and procedures. New Homes Guidelines can apply to either the development of single family units or multifamily units that are under 3 stories.

2.1. Common Measures in ENERGY STAR New Homes

No one change to a system of appliance can reduce energy consumption by 15%. The developer must consider the entire unit and its associated components as one energy system with interdependent parts. For instance, rather than simply installing an energy efficient air conditioner, a developer would start with the air conditioner and continue on to ensure that the ducts were sealed properly, that the walls and attic were insulated properly, that the windows were installed appropriately, and that a programmable thermostat ran the air conditioner at appropriate times and levels throughout the day. By looking at the entire *system* not only is the household using an efficient appliance, but the delivery system associated with that appliance maintains the savings by not leaking or wasting cool air and requiring the air conditioning unit to run more than is necessary.

At a minimum most ENERGY STAR New Homes typically consider:

- **Effective Insulation** - ENERGY STAR qualified homes must have properly installed and inspected insulation in floors, walls, and attics. This ensures even temperatures throughout the house, reduced energy use, and increased comfort. As much as half of the energy used in your home goes to heating and cooling. By preventing heat loss in the winter and heat gain in the summer, a properly installed insulation barrier reduces utility bills year round. When insulation is properly installed, the potential for condensation that can lead to decay of building materials is reduced, helping to improve the durability of your home. If insulation is not properly installed, a home can have excessive heat gain during the summer and heat loss in the winter—forcing the heating and cooling systems to work overtime. The insulation in ENERGY STAR qualified homes meets or exceeds the latest national code requirements, providing year-round comfort while reducing utility bills.
- **High-Performance Windows** - ENERGY STAR qualified windows use advanced technologies, such as protective coatings and improved frames, to help keep heat in during winter and out during summer. In addition to maintaining consistent temperatures throughout homes, they are better for the environment because they reduce the emissions of greenhouse gases and air pollutants from entering and exiting the house. Different models of high-performance windows are appropriate for 4 major U.S. climate zones. Windows (and skylights if applicable) are labeled high performance once they are tested for superior energy performance according to National Fenestration Rating Council (NFRC) guidelines. NFRC is an independent nonprofit organization that sponsors certified rating and labeling programs to help consumers compare the energy and performance features of windows and skylights.
- **Tight Construction and Ducts** - ENERGY STAR qualified new homes must have efficient duct systems that carry air from central heaters or air conditioners to each part of the home and back again. Tight construction and efficient duct systems help to reduce drafts, moisture, dust, pollen, and noise. A tightly sealed home improves comfort and indoor air quality while reducing utility and maintenance. In a standard house about 20 percent of the air that moves through the duct system is lost due to leaks, holes, and poorly connected ducts. The duct systems found in ENERGY STAR qualified homes are third-party tested for tightness and verified to be properly insulated.

- **Efficient Heating and Cooling Equipment** - Energy-efficient heating and cooling systems use less energy to operate and can be quieter, reduce indoor humidity, and improve the overall comfort of the home. ENERGY STAR qualified heating equipment can be up to 15 percent¹ more efficient than standard models. ENERGY STAR qualified heating systems are designed to use less energy than standard systems and reduce the risk of backdrafting dangerous carbon monoxide exhaust into the home. Most ENERGY STAR qualified heating systems employ advanced technologies and high quality components, often resulting in longer equipment life and longer warranties compared to standard models. When properly installed into a tightly sealed home, this equipment won't have to work so hard to heat and cool the home.
- **Efficient Products** - ENERGY STAR qualified homes are equipped with ENERGY STAR qualified products, such as lighting fixtures, compact fluorescent bulbs, ventilation fans, and appliances. ENERGY STAR qualified appliances incorporate advanced technologies and use 10 to 50 percent less energy than standard appliances. ENERGY STAR qualified appliances, including refrigerators, freezers, dishwashers, and clothes washers, lower utility bills, often have superior components and performance compared to standard appliances. Appliances account for nearly 20 percent of the average household's energy use. A comprehensive package of ENERGY STAR qualified appliances can save up to \$80 a year in energy costs compared to standard appliances.²
- **Third-Party Verification** – The distinguishing principal of ENERGY STAR qualified New Homes Program is that the project is inspected and tested by an independent Home Energy Rater (HERS Rater). HERS Raters are specifically trained to evaluate construction techniques, take key measurements, and perform inspections and testing procedures to verify a home's efficiency performance. Verification occurs at 4 critical phases of the project:
 - **Review of Building Plans:** In the design stage, building plans are reviewed for construction features or efficiency measures that can be incorporated into the project in order to reduce energy consumption by 20% (15% in southern states) when compared with a standard home. (These energy savings are described below in Section 2.2) This review can be conducted by an IECC analyst as they are reviewing the building plans for their compliance with the building code or it can be conducted by a HERS rater.
 - **Quality Insulation Inspection:** At an intermediate stage of construction, a HERS certified rater performs an initial inspection to confirm that the building meets required ENERGY STAR guidelines. The HERS rater determines during this inspection that insulation is installed appropriately and according to ENERGY STAR guidelines. When the rater determines insulation is appropriately installed, he/she issues a quality installation certificate to the builder for their records.
 - **Thermal Bypass Inspection List:** During the intermediate construction inspection, the HERS rater also performs a visual inspection of framing areas where air barriers are commonly missed and inspects insulation to ensure proper installation and alignment with air barriers. This checklist serves as an extra check to the Quality Insulation Inspection that the air and thermal barriers are continuous and complete. If all items are in compliance with checklist guidelines, the rater signs the Thermal Bypass Inspection List, certifying the building has passed. A building can only receive the ENERGY STAR label if this checklist has been signed. Both the builder and the rater keep a hard copy of the signed and completed checklist in their records.
 - **Field Verification and Diagnostic Test:** Upon completion, an ENERGY STAR New Homes eligible building must pass a final evaluation that verifies the overall energy consumption is 20% (15% in

1 United States. Environmental Protection Agency. ENERGY STAR. *ENERGY STAR Qualified Heating Equipment*. 8 October 2007. <http://www.energystar.gov/ia/new_homes/features/Heating_062906.pdf>

2 United States. Environmental Protection Agency. ENERGY STAR. *ENERGY STAR Qualified Appliances*. 8 October 2007. <http://www.energystar.gov/ia/new_homes/features/Appliances_062906.pdf>

southern states) less than a 2004 IRC standard home built in that community. The HERS rater uses a checklist to perform essential tests and inspections and enters this information into HERS approved Rating software. This software is used to determine if the measures and building components within a project achieve the required HERS score and the home performs up to the efficiency level required by ENERGY STAR guidelines. When the home is found to be in compliance the rater will submit the file containing the final HERS rating and record of the previous Thermal Bypass Checklist and verification that the building is ENERGY STAR qualified to their HERS provider. Checklists used in this process vary across states. A Field Verification and Diagnostic Testing checklist used in California is attached as an example.

2.2. Labeling a Project ENERGY STAR

There is no one prescriptive on how to make a home meet ENERGY STAR New Homes guidelines. The program works exclusively with new construction in a variety of contexts across the United States and often times, two paths are available to a developer, the Performance Path and the Prescriptive Path.

2.2.1. Performance Path

In the Performance Path, the project developer is responsible for choosing and incorporating the necessary measures into their project and meeting the ENERGY STAR guidelines for certifying their project. In this option, third party HERS raters must verify at certain stages of development that the project meets the ENERGY STAR performance standard or HERS Index Score for an area. For Arizona and Nevada, ENERGY STAR guidelines require that a home use 15% less energy than a standard home compliant with the International Energy Conservation Code (IECC) standards. Developers in Arizona or Nevada must achieve a HERS Index Score of 85 to qualify as ENERGY STAR. For California, the ENERGY STAR guidelines require that a home use 15% less energy than a standard home compliant with Title 24. By requiring that developers adhere to this standard, local governments allow flexibility while achieving the energy conservation goals that can sustain their community's quality of life and reduce the financial burden of utilities on low-income families.

2.2.2. Prescriptive Path

As a second option, the EPA created Builder Option Packages (BOPs), climate-specific construction guidelines, to prescribe measures appropriate for projects developed in different climates. If these measures are incorporated into a project, it will allow the project to meet ENERGY STAR guidelines. Developers working in a climate zone that has an associated BOP can choose to use those construction guidelines rather than creating their own efficiency building design to meet ENERGY STAR requirements. Although using the BOP negates the need for a custom HERS rating, third-party verification that all BOP requirements have been met is still necessary.

Builder Options Packages for specific counties are available on the energystar.gov web site. Due to the unique nature of some state codes and/or climates, EPA has agreed to allow regionally-developed definitions of ENERGY STAR in California, Hawaii, and the Pacific Northwest to continue to define program requirements.

2.2.3. Home Energy Rating System Infrastructure

Incorporating efficiency measures in a project through either the Performance or Prescriptive Path can reduce the energy consumption to the critical threshold required by ENERGY STAR New Homes, but without verification, there is no way to acknowledge the accomplishment of the home. Verifying such an accomplishment is a major impetus behind the ENERGY STAR New Homes program. As ENERGY

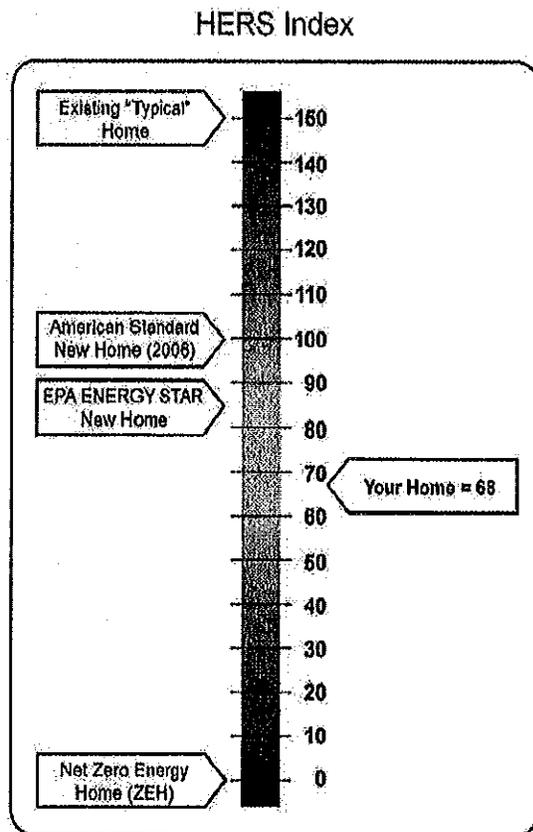
STAR began to label buildings as Energy Star New Homes, the existing Home Energy Rating System (HERS) infrastructure became the standard for measuring whether buildings met the efficiency requirement associated with ENERGY STAR.

HERS is an energy index created and governed by three national standards:

- The National Association of State Energy Officials (NASEO) Technical Guidelines which prescribe the accepted methods and procedures for rating a home;
- The Mortgage Industry Home Energy Rating System (HERS) Accreditation Procedures which prescribe the methods and procedures for certification of HERS System by individual state governments and the national home mortgage industry; and
- The Residential Services Network (RESNET) Training and Certifying Standards which prescribe minimum competencies for Trainers and certified Raters.

Together the three national standards create a complete infrastructure for building, testing, and certifying the energy efficiency of structures along standardized conditions.

In some cases, ENERGY STAR programs are managed locally by an ENERGY STAR partner (typically a local utility company, state agency, or local association). ENERGY STAR partners compile the records they receive from their HERS raters about ENERGY STAR buildings in the area and keep a database of ENERGY STAR buildings. This information is periodically reported to the EPA for tracking purposes of ENERGY STAR buildings across the nation.



Nationally, HERS infrastructure is already in place to perform the necessary components essential to meeting ENERGY STAR requirements. A developer simply needs to tap into this infrastructure through the local HERS provider or ENERGY STAR partner. By visiting the ENERGY STAR website, users can determine whether there is a local program sponsor. If there is not, the Energy Star website holds information about HERS certified raters working across the U.S. Interested parties can use their local HERS provider or the Energy Star website to find a rater to help review project plans and incorporate efficiency measures as well as to test and inspect the installation and adequacy of those measures and verify the project as meeting the ENERGY STAR New Home guidelines.

HERS Index

The HERS Index is a numeric scale that rates the efficiency of homes. Every home that is tested receives a numeric score which falls somewhere within the HERS Index. A 0 on the scale indicates a building with zero energy usage and a 100 indicating a HERS Reference Home that meets the 2004 IRC guidelines. Every point represents a 1% change in the efficiency of the home, with a lower score indicating a more efficient home. All homes that are inspected are assigned a score which indicates its energy efficiency relative to the

HERS Reference Home.

HERS Index Thresholds

On the HERS scale, a home can score greater than 100 if it exceeds the energy usage of the HERS Reference Home (whose energy usage is based on the 2004 IECC Performance Path). For instance, a typical existing home built in 1970 might earn a 130 on the scale or 30% worse than a home built to code (IECC 2004).

An ENERGY STAR Home/Building is defined as one which has been verified through inspection and testing as meeting the ENERGY STAR Qualified New Homes guidelines.

Because an ENERGY STAR home is expected to exceed IECC by 15% in the Arizona and Nevada and exceed Title 24 by 15% in California, to be certified, a home must earn a score of 85 on the HERS Scale to meet the New Homes Standard.

2.3. Incorporating ENERGY STAR New Homes Guidelines into a PJ's HOME Program

In creating a HOME Program which adopts ENERGY STAR New Homes guidelines, it is important that the PJ understand the restrictions and processes associated with the program. The ENERGY STAR New Homes program specifies a few central requirements for a building to be eligible for receiving the New Homes label. A building eligible to receive the ENERGY STAR New Homes label must:

- Be 3 stories or less (single or multifamily project).
- Use 20% (15% in the Southern United States) less energy than the standard design required by IECC or any greater standard adopted by the jurisdiction.
- Receive certification of its relative efficiency by HERS certified raters.

Incorporating ENERGY STAR into an existing program, such as HOME, is a relatively straightforward process consisting of a few necessary steps to ensure its easy integration with the existing policies and procedures. By following the steps below an understandable and functional program can be created.

2.3.1. Make Changes to HOME Program Written Guidelines

To incorporate ENERGY STAR guidelines for new construction and substantial rehabilitation projects under the HOME program, a PJ must first state that this is the intent in the HOME guidelines that direct those types of projects. Because the developer is responsible for the incorporation of technical aspects of ENERGY STAR guidelines, adopting ENERGY STAR guidelines in development projects does not require specific additions to the building code or new specifications for buildings. Language should be included in program guidelines requiring that any eligible development project will meet ENERGY STAR New Homes guidelines.

HUD recommends language be incorporated into written guidelines for development and RFPs such as the following:

“All new and gut rehab residential buildings up to three stories shall be designed to meet the standard for ENERGY STAR Qualified New Homes. All procedures used for this rating shall comply with National Home Energy Rating System guidelines.”

If a Builder Option Package exists for the PJ's climate zone, the PJ could incorporate these specifications within their written guidelines and require that all builders build to these standards.

If a PJ chooses not to require developers to meet the New Homes guidelines but wants to encourage the use of efficiency measures whenever possible, these guidelines should likewise be written into program directives. A PJ may specify developers use ENERGY STAR products whenever it is feasible and beneficial to do so and encourage partnership agreements with organizations that achieve efficiency within written guidelines. Within written guidelines HUD recommends PJs explicitly state:

“[PJ NAME] supports the ENERGY STAR program and its partners. Developers and builders working with [PJ NAME] are encouraged to sign partnership agreements with ENERGY STAR and promote Energy Star products and guidelines to their utmost ability within projects. Whenever an ENERGY STAR product is available, [PJ NAME] developers and builders shall select that product unless it is determined to be unreasonable to do so.”

2.3.2. Incorporate ENERGY STAR Requirements and Incentives into RFPs

Language similar to that suggested for HOME Program written guidelines can be incorporated into the general requirements and project eligibility section of RFPs for development projects. Creating written guidelines that require adherence to the ENERGY STAR Program is the most direct way to require that any projects receiving HOME funds include energy efficiency measures as an integral part of the project.

A PJ can also create incentives for incorporating efficiency measures into projects by offering a variety of incentive programs or attaching preferential scoring to efficiency measures in RFP language. Incentives are not as strong as written standards to which a program must adhere. Incentives can be appropriate however, for piloting efficiency requirements and attempting to understand the benefit and cost they bring to a project before adopting them uniformly. An incentive program can additionally help a PJ to determine the specific measures that are appropriate for different types of projects in the area. Examples of incentives include:

- Score proposals according to the efficiency of the project design specifications.
- Offer increased funding levels for developers to pay up front costs for efficient systems.
- Offer increased funding levels for the cost of inspections required by the New Homes Program.
- Offer density bonuses for energy efficiency (equal to amount of energy its saving).
- Waive fees or restrictions on projects that are saving energy above a certain threshold.
- Streamlined processing/approval of projects proposing ENERGY STAR Standards.

Language can be further strengthened by adding scoring criteria that emphasize efficiency components and adherence to ENERGY STAR guidelines; and offer increased competitiveness for developers that incorporate these elements into their projects.

2.3.3. Enhance Monitoring and Inspecting Procedures

A government agency does not need to incorporate new inspection criteria into its existing inspection procedures funded projects. As part of the ENERGY STAR New Homes labeling process, a HERS Rater must inspect and verify that the building meets required efficiency standards. Thus, a PJ must only require the verification from the HERS Rater that the building has passed relevant inspections in order to monitor it for meeting ENERGY STAR requirements. Proof of this verification should be documented in the project file with all other HOME required documentation.

2.3.4. Document and Report ENERGY STAR in IDIS

Because implementing energy efficiency measures is a priority for HUD and HUD has adopted ENERGY STAR as its efficiency model, the number of ENERGY STAR homes created through the HOME Program is one of the program's benchmarks. The Integrated Disbursement and Information System (IDIS) used to track and monitor the state of each PJ's HOME Program allows the PJ to indicate whether a unit created through the HOME Program meets ENERGY STAR new construction guidelines. PJs should ensure that they collect information about ENERGY STAR labeled projects from developers and accurately report the number of units constructed according to these guidelines.

To report in IDIS accurately, PJs must understand what constitutes an ENERGY STAR home. The unit must be built according to the guidelines explained in this chapter. While incorporating efficiency measures or building features should be encouraged, unless a unit has passed the rigorous certification process described, the PJ cannot consider it an ENERGY STAR home and thus, cannot report it as such in IDIS. PJs should take great care in determining all ENERGY STAR requirements have been met and documented in the project file before reporting any unit in IDIS as an ENERGY STAR unit. Accurately reporting ENERGY STAR homes in IDIS allows the PJ to ensure developers adhere to construction requirements and to determine how successful requirements or incentive programs for developing units according to ENERGY STAR guidelines has proven. Reporting ENERGY STAR units in IDIS also allows HUD to observe how much of an impact the HOME program has achieved in creating energy efficient homes.

3. Efficiency in HOME Projects for Existing Housing

Rehabilitation programs are most successful when energy efficiency is a key component. Energy efficiency can improve indoor air quality, lowers utility bills, and uses higher quality equipment. It also produces a more comfortable home, extends the life of the home, and may result in a higher resale value of the home.

Unlike new construction and gut rehab projects, ENERGY STAR does not offer specific guidelines for the rehabilitation of existing housing units. Because of the smaller scope of moderate rehabilitation projects compared with new construction and gut rehab, it is generally impossible to incorporate a sufficient number of measures from the New Homes Program to achieve the energy efficiency levels required for ENERGY STAR.

3.1. Common Measures to Consider in Rehab Projects

The age of, and energy consuming systems within, existing housing units can span an extremely wide range, making it difficult to create a set of prescriptives to guide reducing energy usage. However, common areas that benefit from efficiency improvements exist and substantial energy savings are possible, often with modest effort and investment, in moderate rehabilitation activities. Systems that common lead to energy inefficiency in existing housing units include:

- **Heating and Cooling Systems:** Heating and cooling equipment together account for more than two-thirds of the energy requirements of a typical house. The conditioning and conducting of air can use a great amount of energy and leaves several areas vulnerable to energy inefficiency. If equipment is improperly installed or maintained or the home's duct system is leaking air into unconditioned spaces, large amounts of energy can be unnecessarily expended. The proportionate need for heating and cooling primarily depends on the climate but significant opportunities to reduce energy costs exist across all climate zones through the use and proper maintenance of high-efficiency heating and cooling appliances.

- **Building Envelope:** Wherever the components of the thermal envelope meet, a crack or potential air leak exists. Air leakage from cracks and gaps in a house's thermal envelope accounts for approximately one-third of its energy loss. Although some gaps are intentionally placed in the envelope, such as windows, utility openings, etc., they are normally sealed with caulk, weather-stripping, or some other material to prevent unintended air leakage. Creating a "tight thermal envelope" by ensuring all unintentional cracks are sealed and all intentional cracks are appropriately weatherized can accomplish large energy savings.
- **Insulation:** In addition to air leakage through gaps in the building envelope, depending on climate and structural conditions, up to one-third of the heat loss in a home may be attributed to the walls and attic, due to poor insulation. Even a home with a tight thermal envelope may benefit from insulation to further retard the flow of heat into or out of a unit. Insulation is rated using an R-value – the value to which it resists heat flow. The higher the R-value the more it prevents heat transfer and different R-values are appropriate for different climates. Replacing inappropriate insulation with the appropriate R-value is installed and that the insulation is appropriately installed will create greater efficiency in existing homes.
- **Windows:** Windows are intentional openings in a home's thermal envelope. However, windows can allow heat in and out of a house even when closed, causing conditioning systems to work harder and use more energy. ENERGY STAR qualified windows use advanced technologies, such as protective coatings and improved frames, to help keep heat in during winter and out during summer. In addition to maintaining consistent temperatures throughout homes, they are better for the environment because they reduce the emissions of greenhouse gases and air pollutants from entering and exiting the house. New windows, especially Energy Star-rated windows, can be a cost effective means of integrating rehabilitation goals and energy efficiency concerns. If replacing old windows is not an option, be sure they are caulked properly to prevent leakages.

There are several measures corresponding to the common energy issue areas in existing housing which can easily be incorporated into most moderate rehabilitation projects that have a modest cost but which can maximize energy savings. The specific property needs, geographic location, and budget of each rehabilitation project will determine which of these activities are most appropriate.

3.1.1. Energy Efficiency in Large, Multi-unit Buildings

The elements that contribute to poor energy efficiency are the same in single family and multifamily buildings. However, multiunit buildings offer some advantages over single family homes in terms of energy efficiency. An agglomeration of units with shared structural and mechanical systems, such as roofs, exterior walls, climate control and water, can benefit from increased energy efficiency than they would as individual units. Because a lower percentage of the building envelope in multiunit buildings is typically exposed to the exterior as compared to single family homes, heating and cooling these buildings is less energy intensive per unit.³

³ Department of Energy, Building Technologies Program, <http://www.eere.energy.gov/buildings/info/multifamily>.

3.1.2. Key Considerations When Increasing Efficiency in Existing Units

When undertaking a moderate rehabilitation project there are many factors to consider when deciding what improvements or activities to include in the project. The amount of financing available and the condition of the property will play the central role in determining the priority items to address. However, when considering what energy efficiency measures to take as part of a rehabilitation project, there are four key considerations.

- **Geographic location:** The geographic location or climate of the area will influence what types of energy efficiency activities make the most sense. The benefits to enhancing energy efficiency vary based on climate, which differ depending on whether the rehabilitation project is occurring in a heating or cooling climate.
- **The payback period:** Calculating the payback period, how quickly a repair or modification will pay for itself based on savings due to lower costs, will inform the process of deciding what rehabilitation activities to undertake. Determining payback is discussed in greater detail below.
- **Reduced operating costs:** For low-income households there are financial benefits to reducing the operating costs of housing, even if the payback period is long. By reducing energy costs and maintenance, low income households can save more of their income for other needs and are cushioned against future increases in energy prices.
- **Beyond economic benefits:** There may be situations in which energy efficiency measures are taken for which the economic benefits are modest, when the cost of undertaking certain measures is equal to or greater than the energy cost savings that will be realized. HUD is willing to allow HOME funds to be used in these situations, when there are additional benefits such as improved health and safety of residents or mitigation of the risk of spikes in future energy costs.

3.2. Incorporating Energy Efficiency into HOME Guidelines for Existing Housing

Promoting energy efficiency measures into rehabilitation activities should not require substantial modifications to existing program design and procedures for a PJ. However, as with incorporating energy efficiency in new construction, there are key steps or actions a PJ must take to enhance energy efficiency measures in their rehabilitation activities. These steps are similar to those involved in adopting energy efficiency in new construction.

3.2.1. Make Changes to HOME Written Guidelines

The efficiency measures that can be incorporated into existing units will depend upon the scope of the project and any components being rehabilitated. When creating written guidelines for construction and rehabilitation projects, the PJ requiring such a program should be aware of, and sensitive to, the differences that different types of activities will entail. A PJ should make every effort to minimize the complication that incorporating energy efficiency measures will add to a project. While it may not be feasible to establish an energy standard that all rehabilitation activities must meet, a PJ can work with contractors to identify the energy efficiency measures that make sense as part of a rehabilitation effort and encourage contractors to undertake these measures. As a general rule, the following ENERGY STAR areas of consideration tend to be appropriate for the indicated project type.

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	<i>External sealing</i>	<i>Duct Sealing</i>	<i>Install Insulation</i>	<i>Efficient HVAC Systems</i>	<i>High Performance Windows</i>	<i>Metal Halide Exterior Lamps</i>	<i>ENERGY STAR Appliances</i>	<i>Compact Fluorescent Light Bulbs (CFLs)</i>
Multifamily Moderate Rehab	X	X				X	X	X
Single Family Moderate Rehab	X	X					X	X
Single Family Homebuyer				☒			X	X

Rehabilitation Projects

To incorporate greater efficiency as a goal in moderate rehabilitation projects, a PJ should modify program documents to reflect this goal. Towards achieving this, PJs can:

- Write into projects requirements that specific measures be considered for each building component the rehab will address. These measures can be based upon ENERGY STAR BOPs and other efficiency and sustainability guidelines discussed later in this manual. For moderate rehabilitation or repair projects, PJs are encouraged to:
 - Specify ENERGY STAR Qualified Appliances, Lighting, and other Products (see table)
 - Require Home Sealing
 - Require Recommended Energy Efficient HVAC systems
 - Follow other ENERGY STAR standards as appropriate
- Indicate that if ENERGY STAR appliances or equipment are available, ENERGY STAR appliances or equipment must be installed when equipment is being replaced as part of a rehab project.
- Require an energy audit prior to rehabilitation to identify what energy efficiency measures may be most cost effective for a property.
- Update monitoring checklists to confirm that energy efficiency measures were properly completed and installed.
- Provide educational material to occupants or homeowners about operating and maintaining the energy efficiency systems or equipment to maximize their cost and energy savings.

A PJ may direct in the written guidelines that projects will adhere to ENERGY STAR standards whenever possible, thus maintaining a degree of flexibility for the developer to choose measures that are cost effective and feasible for the project. A PJ may also choose to specify one or several particular systems or measures it believes merit incorporation in all projects. For example, a Phoenix PJ may require ENERGY STAR Air Conditioning units incorporated in all moderate rehab projects.

Homebuyer Assistance

In some cases, a PJ's HOME program may not involve direct development or rehab work on a dwelling. In cases when PJs use HOME funds to subsidize the purchase of homes by low-income households, efficiency measures may still be encouraged as part of the program.

PJs can require that in order for a household to receive down payment assistance, the home purchased retains a certain degree of energy efficiency. As part of the HOME program, a home eligible for down payment assistance must pass a Housing Quality Standards (HQS) inspection or any higher guidelines developed by the PJ. PJs can easily incorporate efficiency measures into their written guidelines and inspection criteria. PJs may choose to hold these homes to a lower standard of efficiency than dwellings that the PJ retains some control over in the development process. In the case of encouraging energy efficiency for home purchasing assistance, the PJ must balance the extra cost that efficiency measures may add to the cost of the home with their ability to provide tangible assistance to income-eligible households towards the purchase of a home. Although efficiency measures required in a down payment assistance program should achieve a level of efficiency while keeping price at a modicum, certain measures can be incorporated into the home at any stage of development. Within a home buyer assistance program, PJs are encouraged to:

- Require a HERS index score of 100.
- Specify Energy Star Qualified Products.
- Require an energy audit as part of the home inspection process.

Encourage participants to consider mortgage financing products, such as FHA's Streamline K and Energy Efficient Mortgage programs, that enable buyers to finance energy improvements as part of the home purchase transaction.

3.2.2. Incorporating Efficiency Requirements and Incentives in RFPs

As previously explained, while written guidelines are the most direct way to require that any projects receiving HOME funds include energy efficiency measures as an integral part of the project a PJ can also create incentives for incorporating efficiency measures into projects by offering a variety of incentive programs or attaching preferential scoring to efficiency measures in RFP language. Examples of incentives appropriate to rehabilitation of existing housing include:

Rehabilitation Projects

- Provide energy audits for rehabilitation projects. In many cases energy audits or assessments can be provided by local community service agencies involved in the Department of Energy's Weatherization program or by contractors administering utility sponsored energy efficiency programs.
- Create a program for projects receiving HOME (or other subsidy) to partner with utility company or local energy auditor to incorporate baseline efficiency measures at no cost.

Offer increased funding to projects in order to address major energy issue areas

Home Buyer Assistance

- Offer increased competitiveness for receiving assistance for households purchasing an efficient home (competitiveness increases as efficiency of home increases).

Offer funding over a pre-designated cap for homes incorporating efficiency measures (create standard funding amounts to associate with specific measures or increases in home efficiency)

If a PJ decides not to require the ENERGY STAR New Homes guidelines or a BOP, but would like to require specific efficiency measures, these can be written into guidelines for specific types of project. The ENERGY STAR program provides an excellent source of building systems and components which can significantly alter the energy consumption of a building. PJs can use the ENERGY STAR guidelines or other guidelines to determine which systems they will require developers to make energy efficient above HUD official standard. Examples of guidelines a PJ might choose to include in sample guidelines are in Section 3.3.

3.2.3. Monitor and Document Incorporation of Efficiency Measures

If rehab projects require efficiency measures, or receive additional funding in order to incorporate efficiency measures, the PJ should create a process for ensuring those measures were incorporated into the project. As with new construction the PJ does not need to inspect for specific technical requirements. Rather it should require that the contractor performing the rehab certify that all efficiency measures required in the written agreement were implemented/installed in the unit and document this with any applicable verification the unit received (i.e. HVAC inspections, thermal bypass inspections, etc.). Verifications and Inspections should be included in the project folder along with all other compliance documentation.

3.3. Additional Measures for HOME-Funded Projects

Beyond ENERGY STAR, PJs may want to pursue additional energy efficiency measures and/or incorporate green design components into projects. The State of California Department of Energy has compiled an extensive database of energy efficiency resources (DEER) of efficiency measures commonly installed in the residential and nonresidential market sectors. DEER includes ENERGY STAR and other efficiency measures that PJs might consider encouraging within the design of residential construction projects. A more complete description of DEER is included in Section 4 as well as a description of how a PJ might prioritize measures included in the database for their community.

Additional measures that PJs might want to consider in their written guidelines or incentive programs drawn from DEER and LEED include those in the following table. (A description of these measures is included as Attachment 1)

	Pipe wrap	High efficiency water heater	T8 or T5 lamps with electronic ballasts	Delamping T12 fluorescent fixtures	Hard-wired CFLs	High efficiency LED exit signs	Low-flow showerheads and toilets	Faucet aerators	Low toxicity paints	Hot Water Blanket	AC Refrigerant adjustments	Efficient pool pumps	Efficiency-focused system controls
Multifamily New Construction Rehab	X	X	X	X	X	X	X	X			X	X	
Multifamily Moderate Rehab			X	X		X	X	X					X
Single Family New Construction	X	X			X	X	X	X			X	X	
Single Family Moderate Rehab						X	X	X	X	X			
Single Family Homebuyer	X	X				X	X	X					

4. Tools for Calculating Savings

Several tools exist to help calculate the savings associated with efficiency measures. These tools are based on large databases which allow the user to enter a range of information about a given project in order to determine average energy savings the projects could achieve, the type of measures that are appropriate for that project, and the financial savings associated with each measure in its unique context.

These tools are useful not only for deciding what efficiency measures are appropriate and when, but also in working with developers to understand the cost and payback associated with different measures and reaching compromises, if necessary. The best way for a PJ to choose specific measures to include in their written guidelines is to calculate the energy savings based on their unique context or project specifications. The best way for a PJ to justify the benefit these measures will bring a project is to calculate the cost savings implementing these measures will mean for a project through reduced utility bills.

These tools range in their degree of complexity and detail and each is appropriate at different times. The tools offer recommendations on the most effective measures to reduce energy consumption and are appropriate for a broader range of projects, such as rehabilitation project, to which the New Homes program does not apply. None of the tools will necessarily offer the full range of energy savings that the ENERGY STAR New Homes program achieves.

4.1. HUD Rehab Advisor

HUD's Energy Efficient Rehab Advisor is an easily accessible online tool that allows interested parties of any level of experience or involvement in a project to gain access to recommendations for energy efficiency rehabilitation. The Advisor tool uses general information about the proposed building (type, location, age) and the user's role in the proposed project (building owner, contractor, designer, lending agency, etc) to recommend efficiency measures and offer estimates of the cost of those measures, the monetary savings the measure should achieve, and the amount of time it will take for the measure to pay its cost back. These recommendations are based on ENERGY STAR specifications, and general building and climactic characteristics. This means that the recommendations and savings figures attached to them are rough estimates for what might be expected for an actual project. The rehab advisor additionally offers the benefits each recommended measure can achieve outside of energy savings.

A number of different variables play into the actual figures – specific climate, building components, construction type, age, fuel type, etc – but these recommendations are nonetheless very valuable. The information provided – cost, savings, and payback data – are representative of a typical building in the specified region and are a realistic illustration of typical results. This is a very quick, no-cost start to examining the savings to be gained by pursuing an energy efficiency rehabilitation project. Such preliminary information may help with planning, budgeting, and proposing a project.

Local Governments can use the Rehab Advisor to determine if there are specific areas of emphasis that rehab projects in their community should consider based on its location, whether it is a single or multifamily project, and the average age (or upper and lower age limits), of rehab projects they typically fund. For instance, a PJ in a desert climate may use rehab advisor to determine that rehabilitation projects on buildings built before a certain year will greatly benefit from the installation of new energy efficient windows and require efficient windows as a part of all such projects. Rehab advisor can additionally give government agencies an idea of the cost of including efficiency aspects into a rehab project and the savings these measures are expected to achieve in order to determine the cost effectiveness of the measures and the payback period. This can help the local government determine which measures it will prioritize in its rehab programs and may prove useful for working with developers to understand the long-term benefit of these measures. Using the same example, the desert PJ might see from rehab advisor that

while efficient windows included in a rehabilitation project will cost only slightly more than installing standard inefficient windows and create a great deal of energy savings which translate into financial savings for the owner, incorporating ceiling fans into rooms to reduce the running time of air conditioning systems, does not create enough of a reduction to make up the electricity the fans themselves use to run. The PJ would then prioritize efficient windows while discouraging the addition of ceiling fans.

4.1.1. How to Use It

The HUD Energy Efficient Rehabilitation Advisor is an online tool that can be found at <http://rehabadvisor.pathnet.org/index.asp>.

The initial analysis requires the following information:

1. Building type: single family or multifamily.
2. Role in the project: building owner, project manager, general contractor, designer, development agency, lending agency, or technical assistance.
3. Climate zone: Northeast, Central, NorthCentral, Southeast, Southwest, or West.
4. Building age: Pre-1960s, 1960s, 1970s, 1980s, 1990s, or unknown.

The Advisor provides information on the benefits of implementing energy efficiency rehabilitation projects, for example, increased profits, decreased maintenance, increased customer/resident satisfaction, and environmental benefits.

The Advisor then lays out specific project recommendations subdivided into different categories – gut rehab, roof, basement, attic, kitchen, bathroom, wiring, plumbing, heating and air conditioning, windows, floor, and facelift. This allows the user to look at different areas of a building and decide on a project focus while taking into consideration the savings and benefits from different recommended measures.

4.1.2. An Example

The following is an example to illustrate the type of information the Rehab Advisor provides.

Inputted building and project characteristics:

1. Multifamily
2. Development Agency
3. West
4. 1980s

Selected project category: Heating and Air Conditioning Systems

4.1.3. Recommendations

MEASURE	ADDED COST	SAVINGS	PAYBACK	BENEFITS
Programmable Thermostat - Install an ENERGY STAR qualified programmable thermostat.	.13 \$/sf	.07 \$/sf/yr	1.8 years	Improved comfort; Cost savings
Seal Air Leaks - Bring in a professional home sealer to reduce leaks around windows, doors, floor, ceiling, plumbing and electrical features in your building.	.28 \$/sf	.03 \$/sf/yr	10.3 years	Improved comfort; Cost savings; Improved controls; Reduced freezing problems
Insulate Floors - Insulate floors above unconditioned spaces to at least R-19. Install vapor retarders in non-vented framed floors.	.64 \$/sf	.06 \$/sf/yr	11.3 years	Improved comfort; Improved controls; Quiet operation
Insulate Walls - Insulate exterior walls to at least R-11.	.52 \$/sf	.04 \$/sf/yr	12.4 years	Improved comfort; Improved controls; Quiet operation; Reduced freezing problems
Insulate Ceilings - Insulate ceilings in all top floor units to at least R-30, or R-38 in the northern parts of the climate zone.	.49 \$/sf	.04 \$/sf/yr	13.5 years	Improved comfort; Improved controls; Quiet operation

Notes: a) The added costs, savings, and payback figures are based on International Energy Conservation code and Federal regulations. b) The final column in the table above indicate different benefits, for example, increased comfort and lower costs for programmable thermostats.

Assumptions

The Energy Efficiency Rehabilitation Advisor uses a set of assumptions to generate its recommendations for both single family and multifamily housing. Below are some of the most important points of those assumptions. A full description can be found at <http://rehabadvisor.pathnet.org/sp.asp?id=10830> for single family housing and <http://rehabadvisor.pathnet.org/sp.asp?id=15026> for multifamily housing.

SINGLE FAMILY HOUSING

Recommendations are based on ENERGY STAR performance levels where applicable. Regional recommendations are based on 2,000 square foot home in the following cities:

- Northeast: Burlington, VT
- Central: Nashville, TN
- North Central: Billings, MT
- Southwest: Phoenix, AZ
- Southeast: Houston, TX
- West: Oakland, CA.

Recommendations assume 15% window coverage.

Fuel type for each region selected according to Energy Information Administration's specification for fuel most widely used in the region.

MULTIFAMILY HOUSING

Recommendations assume 5 or more dwelling units and are based on ENERGY STAR performance levels where applicable. Energy use is based on 6 climate regions based on representative heating degree days (HDD) and cooling degree days (CDD):

- Northeast: 6067 HDD/867 CDD
- Central: 4039 HDD/1806 CDD
- North Central: 5944 HDD/609 CDD
- Southwest: 1600 HDD/3667 CDD
- Southeast: 900 HDD/3353 CDD
- West: 3388 HDD/208 CDD.

Building and use characteristics are drawn from several Lawrence Berkeley Laboratory studies, Energy Information Administration surveys, and U.S. DOE data.

Fuel type for each region selected according to Energy Information Administration's specification for fuel most widely used in the region.

4.2. The Home Energy Saver Cost Calculator

The Department of Energy sponsored the creation of the Home Energy Saver Cost Calculator to enable the user to get a realistic idea of the actual costs and savings of implementing efficiency measures in an existing building by asking for slightly more detailed information than does the Rehab Advisor. The Home Energy Saver caters to rehabilitation costs of single family homes but can be used by renters as well to estimate costs of implementing energy efficiency measures in their unit. The Energy Saver calculates energy use and savings opportunities, based on a detailed description of the home provided by the user. Users can begin the process by simply entering their zip code, and receive instant general estimates about utility bills for buildings in their area. By providing more information about the home the user will receive increasingly customized results for end uses of energy along with energy-saving upgrade recommendations.

4.2.1. How to Use It

The Home Energy Saver Cost Calculator can be found at <http://hes.lbl.gov/>. The HUD Rehab Advisor site also has a link to this calculator.

The information that the energy Saver requires for a full estimate includes:

1. The city in drop down menu with the most similar climate
2. Year building was built
3. Building square footage
4. Number of floors
5. The direction the building faces
6. The type of foundation
7. The attic/roof insulation
8. Whether or not you have wall and/or floor insulation
9. Whether there is a clothes washer on site

10. How many refrigerators and/ or freezers are on site
11. Fuel for water heater
12. Type of Heating Equipment
13. Type of cooling equipment
14. Number and placement of windows
15. Energy prices user pays
16. Number of people living in structure.

The calculator also asks what level of efficiency the user would like to achieve and the payback period the user would like results to adhere. Based on the above information, the calculator gives a summary estimate of the energy and monetary savings efficient upgrades could add to a project as well as the reduction in emissions achieved by implementing energy-efficiency improvements. Detailed breakdowns are available for each of these areas by each recommended measure. The calculator describes the efficiency measure that it assumed would achieve these savings, but where additional measures are available, users are allowed to alter individual measures that incorporated into the project to see how the adjustment would change the cost and savings associated with that end use. All end uses (heating, cooling, major appliances, lighting, and miscellaneous uses) are included in this analysis.

The Rehab Calculator also generates a report of the recommended efficiency measures and provides an estimate of the incremental increase in construction costs and the resulting bill savings associated with that upgrade package. The incremental cost and savings are put into a formula which further offers the user a summary of the simple payback period for installing this package and the rate of return on investment.

4.2.2. An Example

To illustrate what type of information the Advisor provides the following is an example.

Inputted building and project characteristics:

1. Payback period: 10 years
2. Efficiency level: ENERGY STAR/DOE recommended
3. City with similar climate: Reno, NV
4. Year house was built: 1982
5. Conditioned floor area: 1800 sq. ft.
6. Stories: 1
7. Front of house faces: southeast
8. Foundation: slab on grade
9. Attic/roof insulation R-11 (4-6 inches)
10. Wall insulation: yes
11. Floor insulation: no/don't know
12. Refrigerators: 1
13. Stand alone freezers: 0

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- 14. Water heater fuel: gas
- 15. Heating equipment: Central gas furnace
- 16. Cooling equipment: Central air conditioner
- 17. Windows on each side: Front-2, Left-3, Back-6, Right-3
- 18. Energy prices: electric-.118 \$/Kwh, natural gas-.821 \$/therm, liquid propane gas-1.487 \$/gallon, fuel oil-1.494 \$/gallon
- 19. Residents: 6-13 years-2, 14-64 years-2.

4.2.3. Recommendations

Home Energy Saver Making It Happen

http://hes3.bl.gov/hes/ta?topSessionId=903993

Help us improve the site. [Click here](#)

About HES What's New Energy Librarian Glossary FAQ Search Help

General Info Heating & Cooling Water Heating Major Appliances Small Appliances Lighting

Session ID: 903993
Zipcode: 94110
Location: San Francisco, California

Initial Results: Your Energy Bill (\$/year)

Existing Home \$2167

With Selected Upgrades \$1157

	Electricity	Gas	Water Heating	Water Heating	Lighting	Other
Existing Home	\$ 1059	\$ 124	\$ 221	\$ 454	\$ 152	\$ 157
With Selected Upgrades	\$ 481	\$ 58	\$ 132	\$ 258	\$ 91	\$ 157

Potential Annual Savings	
Money:	\$1,010
Energy:	Wh & Therms & gal. Oil & gal. LPG
CO ₂ Emissions:	0 lb. CO ₂
More detail on energy and CO₂ emissions...	

Selected Upgrade Package for your Home

Upgrades Requiring Investment

1. Thermostat	10. Gas furnace
2. Electric clothes dryer	11. Attic insulation
3. Indoor lights	12. Refrigerator
4. Duct Sealing	13. Slab insulation
5. Dishwasher	14. Duct insulation
6. Air sealing	15. Central air conditioner
7. Windows	16. Ceiling fan
8. Gas water heater	17. Wall insulation
9. Clothes washer	18. Cool roof

[Comparing Results to your Utility Bill](#) | [See typical costs of running various appliances](#)

**Incorporating Energy Efficiency into HOME-Funded Affordable Housing Development
Part 1: Energy Efficiency Strategies and Approaches for Home Funded Projects**

Home Energy Saver Making It Happen

About HES What's New Energy Librarian Glossary FAQ Search Help

See your ID: 00988
Zipcode: 94110
Location: San Francisco, California

Modify Upgrades: Your Energy Bill (\$/year)

Existing Home: \$2167
With Selected Upgrades: \$1157

Existing Home	\$1059	\$124	\$221	\$454	\$152	\$157
With Selected Upgrades	\$481	\$58	\$132	\$258	\$91	\$157

Potential Annual Savings

Btu: \$1,010

Energy: 2,858 kWh & 741 Therms

CO₂ Emissions: 10,467 lb. CO₂

[More detail on energy and CO₂](#)

[Instructions](#) | [Existing Home Configuration: View | Change](#)

Add/ Remove	Upgrade	Upgrade Choice and Description	Bill Savings Compared to			Max. Cost for 10 Year Payback	Simple Payback Time	Estimated Return on Investment
			Existing Unit	New Unit	Estimated Cost			
Total for Selected Upgrades:			\$1,010	\$946	\$559	\$946	4	26%
<input checked="" type="checkbox"/>	Thermostat	ENERGY STAR labeled programmable	\$91	\$91	Typical Costs \$70	\$910	1	130%
<input checked="" type="checkbox"/>	Electric clothes dryer	Switch to gas dryer	\$76	\$76	Typical Costs \$50	\$760	1	152%
<input checked="" type="checkbox"/>	Indoor lights	CFLs in high-use fixtures	\$91	\$91	Typical Costs \$96	\$910	1	92%
<input checked="" type="checkbox"/>	Duct Sealing	Units Reduce leakage to 5% of total airflow	\$124	\$134	Typical Costs \$300	\$1,340	2	44%
<input checked="" type="checkbox"/>	Dishwasher	Units EF=0.58 (ENERGY STAR)	\$26	\$13	Typical Costs \$30	\$130	2	43%
<input checked="" type="checkbox"/>	Air sealing	25% air leakage reduction	\$132	\$132	Typical Costs \$400	\$1,320	3	33%
<input checked="" type="checkbox"/>	Windows	Units 2-pane/solar-control low-E/argon gas/wood (ENERGY STAR)	\$159	\$159	Typical Costs \$432	\$1,590	3	37%
<input checked="" type="checkbox"/>	Gas water heater	Units EF=0.62	\$34	\$34	Typical Costs \$130	\$340	4	25%
<input checked="" type="checkbox"/>	Clothes washer	Units MEF=1.42 WF=9.5 (ENERGY STAR)	\$69	\$54	Typical Costs \$210	\$540	4	24%
<input checked="" type="checkbox"/>	Gas furnace	Units AFUE=90 (ENERGY STAR)	\$141	\$141	Typical Costs \$991	\$1,410	5	20%
<input checked="" type="checkbox"/>	Attic insulation	Units R-38	\$163	\$163	Typical Costs \$1099	\$1,530	7	14%
<input checked="" type="checkbox"/>	Refrigerator	Units 15% better than standard (ENERGY STAR)	\$54	\$7	Typical Costs \$50	\$70	7	14%
<input type="checkbox"/>	Basement floor	Units R-5 slab edge	\$11	\$11	Typical Costs \$77	\$110	11	11%
<input type="checkbox"/>	Basement walls	Units R-6	\$10	\$10	Typical Costs \$80	\$100	10	10%
<input type="checkbox"/>	Ceiling	Units SEER=14 (ENERGY STAR)	\$11	\$11	Typical Costs \$280	\$110	11	11%
<input type="checkbox"/>	Ceiling	Units ENERGY STAR-labeled	\$12	\$11	Typical Costs \$50	\$110	11	11%
<input type="checkbox"/>	Walls	Units R-11 wall cavity	\$12	\$12	Typical Costs \$40	\$110	11	11%
<input type="checkbox"/>	Roof	Units Solar reflectance = 0.50 (low slope roofs)	\$11	\$11	Typical Costs \$15	\$110	11	11%

NCE = Not Cost Effective. This upgrade will not pay for itself in your situation. There may be other reasons, such as improved comfort, to implement the upgrade, or it could be made more cost-effective if the investment cost is reduced.

Grayed rows are not included in the calculated values for the retrofit package. To include them check their boxes and recalculate.

**Incorporating Energy Efficiency into HOME-Funded Affordable Housing Development
Part 1: Energy Efficiency Strategies and Approaches for Home Funded Projects**

Home Energy Saver Making It Happen

Session ID: 003002
Zipcode: 94110
Location: San Francisco, California

Upgrade Report: Your Energy Bill (\$/year)

Existing Home: \$2167
with Selected Upgrades: \$1157

Existing Home	\$1059	\$124	\$221	\$454	\$152	\$157
With Selected Upgrades	\$481	\$58	\$132	\$258	\$81	\$157

Potential Annual Savings

BAE	\$1,010
Energy	2,838 kWh & 741 Therms
CO ₂	10,467 lb. CO ₂

Upgrade Package Summary:

Annual Utility Bill Savings: \$948
Estimated Package Cost: \$3550
Maximum Price for 10 year payback: \$9480
Return on Investment: 26%
Simple Payback Time: 4 years

Assumptions

The Energy Advisor calculates heating and cooling consumption using the DOE-2 building simulation program (version 2.1E), developed by the U.S. Department of Energy. The program performs a full annual simulation for a typical weather year (involving 8760 hourly calculations) after the user assembles the necessary information describing their home.

DOE-2 performs a very sophisticated series of calculations, but the web-based user interface is relatively simple and results are distilled into a useful form. By entering their zip code information, users are assigned one of 239 weather locations around the United States. Default energy prices for each fuel and state are also available, or users can enter a specific price of their choosing. A full description of the methodology for this calculator can be found at <http://eetd.lbl.gov/emills/PUBS/PDF/Home-Energy-Saver.pdf>.

4.3. The DEER Database

The California Energy Commission (CEC) and California Public Utilities Commission (CPUC) collaborated on the DEER project in order to provide information on energy efficiency measures (like lighting options or insulation) in a comprehensive database. This information includes energy savings, measure costs, and measure life. The savings estimates are based on either engineering calculations, building simulations, measurement studies and surveys, econometric regressions, or a combination of approaches. The DEER data serves as a starting point in the planning and forecasting of the impacts and cost-benefits analysis of energy efficiency programs. It is a fairly complex database containing a large amount of information that is primarily directed at technical users like regulators and consultants developing energy efficiency programs. The database, however, can also be useful as a directory of relevant energy efficiency measures for anyone with a role in energy efficiency rehabilitation projects. Because it lists all

common efficiency measures, one could use the database to consider and compare energy efficiency substitutions for measures that might be proposed in a new construction or rehabilitation project.

Although it is complex, some of the benefits of this database are:

1. It is highly searchable;
2. It is easy to compare similar measures with slightly different cost and savings estimates in order to select the most appropriate for a given project;
3. It is very specific to slight differences within climate zones and exact about how changes in climate will affect savings, price, and other performance associated with the measure.

4.3.1. How to Use It

The DEER database can be found at <http://eega.cpuc.ca.gov/deer/>. From the main page a user can do an online search for specific measures or keywords, browse efficiency measures in different building or system categories, examine final reports on the database and review supporting documents such as the Glossary and User's Guide. While each of these sections is worth investigating, unless one knows exactly what type of measures needed, the "browse measures" area is probably the most useful for non-technical users looking to learn more about and compare applicable measures.

The "browse measures" page is broken into four subdivisions – non-weather sensitive, residential; non-weather sensitive, non-residential; weather sensitive, residential; and weather sensitive, non-residential. This document is focused on the residential measures, under the first and third category headings.

Non-weather sensitive residential measures will not differ according to the location of a building although projects in different regions might realize different savings according to the cost of energy in that location. These measures consist of the following categories:

- Interior ambient and task lighting,
- Refrigeration,
- Hot water,
- Clothes dryers, and
- Pools.

For each of these sub-categories the user is questioned about the measures the user is considering. Pull-down menus give possible selections as follows:

- Interior ambient and task lighting
 - CFL lamps
- Refrigeration
 - ENERGY STAR refrigerators
 - Refrigerator recycling
 - Freezer recycling
- Hot water
 - ENERGY STAR dish washer
 - Heat pump water heater
 - ENERGY STAR clothes washer

- High efficiency water heater
- Pipe wrap
- Low flow showerhead
- Faucet aerators
- Clothes dryers
 - Efficient clothes dryers
- Pools
 - Pool pump.

From here the user can examine, in detail, the costs and benefits to implementing a given measure in any of the sub-categories listed. For example, if the user selects “CFL LAMPS” under the interior ambient and task lighting category, the search engine generates a table with information on all compact fluorescent light bulbs meeting the California Title 24 energy efficiency standards.

Weather sensitive residential measures are also subdivided into different categories:

- Shell
- HVAC.

Again, for each of these sub-categories the user is questioned about the measures the user is considering. Pull-down menus give possible selections as follows:

- Shell
 - Equipment (house fans, etc)
 - Fenestration (windows and window treatments)
 - Insulation (ceiling and wall)
 - Shell (weatherization projects)
- HVAC
 - Equipment (various heating and cooling systems)
 - Controls (programmable thermostats)
 - Maintenance (duct work, air conditioner improvements, etc).

As with the non-weather sensitive measures, by selecting any of these subcategories, the user is given a table of measures to consider.

The measures table is highly searchable and can be both sorted and filtered based on a number of different variables including climate zone, building type, savings unit, and vintage or building age. These categories are defined below. The measures tables can be used on line or downloaded into a Microsoft excel file for continuous use. Because non-weather sensitive items are generally not affected by climate zone, DEER uses a general regional climate zone when filtering non-weather sensitive measures, essentially eliminating the category of climate for these measures.

Climate Zone: two digit code identifying the California climate zones:

- 00 = no climate zone distinction
- 01 through 16 = California Building Standards climate zones 1 through 16
(California Energy Commission Forecasting Climate Zone I in parenthesis)

- 01 Arcata weather station (CEC #1)
- 02 Santa Rosa weather station (CEC N/A)
- 03 Oakland weather station (CEC #5)
- 04 Sunnyvale weather station (CEC #4)
- 05 Santa Marie weather station (CEC N/A)
- 06 Long Beach weather station (CEC #8, #11)
- 07 San Diego weather station (CEC #13)
- 08 El Toro weather station (CEC N/A)
- 09 Burbank weather station (CEC #9, #12, #16)
- 10 Riverside weather station (CEC #10)
- 11 Red Bluff weather station (CEC N/A)
- 12 Sacramento weather station (CEC #2, #6)
- 13 Fresno weather station (CEC #3, #7)
- 14 China Lake weather station (CEC N/A)
- 15 El Centro weather station (CEC #15)
- 16 Mt. Shasta weather station (CEC #14)
- 17 Region-wide.

A map of these zones can be found at http://www.energy.ca.gov/maps/climate_zone_map.html

A Note on Climate Zones

The focus of this manual is the major climate zones in the San Francisco field office. The DEER database uses California Building Climate Zones, but many of these climate zones are similar if not identical to the climate zones in Nevada and Arizona⁴. ICF has identified the following climate zones as major zones in the San Francisco field office territory:

- CA Central Valley Climate Zone
- CA Bay Area Climate Zone
- Mountainous Climate Zone (typical of CA, AZ, NV)
- Desert Climate Zone (typical of CA, AZ, NV).

Within DEER these climate zones adhere to the following California Building Climate Zones:

- CA Central Valley Climate Zone – DEER zones 11 and 12
- CA Bay Area Climate Zone – DEER zone 3
- Mountainous Climate Zone – DEER zone 16
- Desert Climate Zone – DEER zone 14 and 15.

⁴ Monrovia, Gardening Information Center, Sunset Western Climate Zone Map.
<http://www.monrovia.com/MonroviaWeb.nsf/0/cb6449fed56a4706882569200080cd0c?OpenDocument>

These climate zones have already been analyzed and recommended measures extracted from the results for all weather sensitive building components in the second part of this manual as well as a general list of non-weather sensitive measures that are recommended for incorporation into projects.

Building Type: DEER establishes three digit abbreviation letter codes for each building type that it collects information about. In residential buildings, DEER collects information for single and multi-family buildings as well as mobile homes. The abbreviations for these categories follow:

- SMO = Residential Mobile Home - Single Wide
- DMO = Residential Mobile Home - Double Wide
- MFM = Residential Multi-family
- SFM = Residential Single Family.

Savings Unit: Four character code for describing the normalizing unit. There are many of these and they are based on the measure in question.

Vintage: DEER considers the vintage of a building as its general age and assigns a two character code for building vintage which the user will select to denote between new construction and rehab as well as to calibrate the level of energy usage that the building is most likely consuming before efficiency measures are installed. Vintage codes are as follows:

- AV = no vintage distinction
- 75 = built before 1978
- 85 = built between 1978 and 1992
- 96 = built between 1993 and 2001
- 03 = built between 2002 and 2005
- 05 = built 2006 and later (measures as retrofit for nonresidential)
- NW = built 2006 and later (measures as new construction for nonresidential)
- M1 = mobile homes built before 1976
- M2 = mobile homes built between 1976 to 1994
- M3 = mobile homes built between 1995 and 2005
- M4 = mobile homes built 2006 and later.

In the case of residential, anything that is constructed in 2006 and above can be denoted as new construction or retrofit as there is not distinction in terms of the efficiency measure standard to which the building will be held.

4.3.2. An Example

To illustrate what type of information DEER provides the following is an example of measure recommendations when a search is done for window-related measures in the mountainous climate zone, in multi-family buildings built in 2006 or later.

Selected building and project characteristics:

- Non-weather sensitive – Residential
 - Shell
 - Fenestration

- Climate Zone: 16 - Mt. Shasta (Mountainous Climate Zone)
- Building Type: Residential Multi-Family
- Savings Unit: 100 sq.ft. window
- Vintage: 05 - Built 2006 and later.

4.3.3. Recommendations

Below is an abbreviated version of the table provided by DEER, but this example shows the key pieces of information provided. Namely, the measure description, the customer based total building energy use figures (TbaseE through PEbaseG), annual savings figures (Eimpact through Pimpact), the expected useful life (or EUL) of the measure, and the installed cost. Of note, all of the column headings are defined in DEER's Glossary, so this is a good place to look for clarification on the information provided in the database.

Generally however, the Description describes the product name of the efficiency measure for which information is collected. TBase describes the typical amount of annual energy a standard building meeting the specifications inputted by the user consumes. Tbase ending with E denotes electricity in kilowatt hours, P denotes wattage at peak times, and G denotes gas in kBtu. Tbase is usually of interest only to providers and not to consumers of energy-these descriptions would tend to have little impact on the design of a project. PEBase however describes the annual end use baseline for electricity and gas and is of importance to anyone designing a project. This is the baseline from which savings are calculated. Again E denotes electricity and G gas. The impact cells list the annual energy impacts (both positive and negative) associated with the measure they are describing. The *difference* between the PEBase and the impact offers the energy usage of the measure being described. The EUL lists the number of years (unless otherwise noted) that this measure can be expected to last without replacement; and the installed cost gives the cost of purchasing and installing the measure.

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Description	TbaseE	TbaseP	TbaseG	PEBaseE	PEBaseG	Eimpact	Gimpact	Pimpact	EUL	Installed Cost
U-0.50 / SHGC-0.65 (clear) Window	188.568	586.107	14545.3	188.568	14545.3	26.2367	1635.84	90.9736	20	19.1973
U-0.50 / SHGC-0.40 (fint) Window	188.568	586.107	14545.3	188.568	14545.3	55.4414	174.81	280.976	20	28.8641
U-0.40 / SHGC-0.65 (clear) Window	188.568	586.107	14545.3	188.568	14545.3	30.0495	3156.97	86.5278	20	13.0989
U-0.40 / SHGC-0.40 (fint) Window	188.568	586.107	14545.3	188.568	14545.3	61.168	1729.64	276.182	20	22.7657
U-0.35 / SHGC-0.55 (clear) Window	188.568	586.107	14545.3	188.568	14545.3	46.628	3422.92	153.862	20	13.9164
U-0.35 / SHGC-0.32 (fint) Window	188.568	586.107	14545.3	188.568	14545.3	72.1647	2030.48	330.566	20	22.8099
U-0.25 / SHGC-0.35 (clear) Window	188.568	586.107	14545.3	188.568	14545.3	75.8536	3962.92	303.032	20	15.5514
U-0.25 / SHGC-0.22 (fint) Window	188.568	586.107	14545.3	188.568	14545.3	87.2945	3090.53	392.561	20	20.5781
Single Pane Clear Glass with Reflective Film	188.568	586.107	14545.3	188.568	14545.3	58.4832	-3585.39	415.802	10	2.1318
Single Pane Clear Glass with Standard Film	188.568	586.107	14545.3	188.568	14545.3	50.9084	-2712.09	337.839	10	1.5381
Single Pane Clear Glass with Spectrally Selective Film	188.568	586.107	14545.3	188.568	14545.3	40.9008	-1917.48	247.074	10	2.7012
Default Window with Sunscreen	188.568	586.107	14545.3	188.568	14545.3	53.2487	-2999.43	364.113	10	1.2691

For instance, in the example below, 100 sq ft of standard windows cause annual end usage of electricity in a new multifamily building to be 188,568 kilowatt hours. The savings associated with the efficient U-0.50 / SHGC-0.65 windows is 26,236.7 kilowatt hours, meaning this type of window consumes 162,331.3 kilowatt hours annually. If the electricity costs for the area are known a simple calculation (multiplying this rate by the Eimpact) can be performed to identify the annual monetary savings a consumer would realize by installing these windows. This number can then be compared with the Installed Cost amount to determine if and how long it will take for the measure to pay for itself in increased savings. If it takes a number of years for the efficiency measure to pay for itself, this number of years can be compared with the EUL to determine whether or not it will pay for itself before being replaced. Based on all of these numbers, a DEER user can decide for themselves if they will invest in a given measure or not and compare it with all other measures that are available to see if there is a better investment to be had.

Assumptions

The DEER database uses a set of assumptions to generate its recommendations for all types of residential buildings. Below are some of the most important points of those assumptions.

- DEER provides estimates of the energy-savings potential for selected energy efficiency technologies in residential and nonresidential applications. (In this case, we are using it for residential applications only.)
- The database contains information on typical measures—those commonly installed in the marketplace.

5. Partners to Leverage Resources

Many programs exist to assist homeowners, renters, property owners and housing developers reduce the cost burden of incorporating energy efficiency measures into a project.

Energy efficiency programs providing financial incentives, rebates, and technical assistance are frequently available from local utility companies sponsoring energy efficiency programs. Additionally, Public Utility Commissions, third party energy service providers under contract with regional utility companies or public agencies to deliver energy services, or community service agencies administering federally funded weatherization programs offer services.

These partners can be an important source for support in a project where the initial costs of implementing energy efficient measures strain the budget and may require additional sources of support. These partners may offer support such as free diagnostic assessments of a building's energy consumption and may install basic measures or offer rebates for measures the project developer incorporates into a project. Such support effectively cuts the costs that a developer would incur in meeting efficiency standards set by a PJ.

If a PJ has determined that a specific efficiency measure is appropriate for implementation in a project, it can work with energy partners to provide support around that measure in the form of installation assistance and / or rebates or grants. Major energy partners and the programs they tend to provide are summarized below. Additionally, HUD and ICF created a resource guide that offers detailed listings of partners and their programs. This can be found in the Energy Efficiency Resources – Northern California.

5.1. ENERGY STAR Quantity Quotes

To mitigate costs differences between ENERGY STAR products and less efficient models, and assist affordable housing sponsors to gain access to as many ENERGY STAR products as possible, DOE and the U.S. Department of Housing and Urban Development (HUD) created Quantity Quotes to simplify the process for obtaining ENERGY STAR product price information and purchasing ENERGY STAR products. Through the tool, purchasers can

ENERGY STAR Quantity Quotes provides affordable housing sponsors with on-line access to manufacturers and suppliers of ENERGY STAR products. Through the ENERGY STAR Quantity Quotes, multifamily building owners, public housing authorities, and state and local governments can easily locate available ENERGY STAR qualified products, make contact with the suppliers, and negotiate discounted prices through the online purchasing tool. The reduced price of products increases the return on investment and reducing the payback period. Products currently offered through web site include:

- Compact Fluorescent Lamps
- Refrigerators
- Light Fixtures
- Dehumidifiers
- Air Conditioners
- Dishwashers
- Clothes Washers.

Interested parties can access and use the ENERGY STAR Bulk Purchasing tool through the web site: www.quantityquotes.org

5.2. Utility Companies

Utility companies are the most significant partner for ENERGY STAR and local governments that want to encourage the adoption of efficient practices and measures into buildings. Utilities in Arizona, California, and Nevada provide a wide array of publicly available programs and services many of which are targeted to income restricted households.

In California, the California Public Utilities Commission (CPUC) issued \$2 billion in funding for energy efficiency programs during FY 2006 – 2008, including installation of qualifying energy-efficient products in multifamily buildings. This energy efficiency and conservation campaign is the most ambitious in the history of the U.S. utility industry. Some of utilities administering home improvement rebate programs in California include Pacific Gas and Electric, Southern California Edison, Southern California Gas Company, and San Diego Gas and Electric.

Utility companies create a great deal of material that advises energy consumers about reducing energy consumption and costs through their daily practices as well as product choice.

Utility companies in Arizona, California and Nevada offer rebates for ENERGY STAR products and may offer users free efficiency packages that consist of basic energy efficient products that can be easily incorporated into a household. These companies also offer targeted energy assistance and efficiency programs to low income households in order to reduce their energy bills.

A local government can contact their utility provider to find out the programs they offer and if there is any opportunity to partner with them to offer a joint program to encourage the implementation of greater efficiency in local households.

5.3. Multifamily Green Initiatives

In 2006 HUD's Office of Affordable Housing Preservation (OAHP) launched a Multifamily Green Initiative Program designed to incorporate Green principles into the property rehabilitation required in conjunction with Mark-to-Market (M2M) restructuring as well as into the repairs and replacements that are scheduled to occur over the next 20 years of the project's life.

Each property undergoing a M2M restructuring is subject to a Physical Condition Assessment (PCA), a detailed inspection used to identify rehabilitation needs and estimate repair and replacement needs. Projects in the Multifamily Green Initiative Program, receive an expanded PCA scope that explores Greening opportunities. OAHF establishes threshold Green requirements for property owners to qualify for Green Initiative incentives. Beyond this threshold, OAHF will not stipulate what elements must be included in any given property, but will rely on its contractor/underwriters (the Participating Administrative Entities or PAEs) and the owner to highlight the opportunities, costs, and benefits of Green alternatives on each subject property.

As an incentive to property owners to "Go Green," OAHF may at its discretion declare the Green replacements to be "Significant Additions," thus reducing the owner's required financial contribution for rehabilitation costs from the traditional 20 percent to as little as 3 percent of total costs. Upon the owner's assurance that the property management company has a Leadership in Energy and Environmental Design (LEED) Accredited Professional, OAHF may also increase the Incentive Performance Fee (IPF) to support the owner's ongoing maintenance of the Green property.

5.4. FHA Energy Efficient Mortgage and Streamline (k) Program

The Energy Efficient Mortgages (EEM) program helps homebuyers or homeowners save money on utility bills by enabling them to finance the cost of adding energy-efficiency features to new or existing housing as part of their FHA-insured home purchase or refinancing mortgage. This program seeks to help achieve national energy-efficiency goals (and reduce pollution) and provide better housing for people who might not otherwise be able to afford it. The cost of the improvements that may be eligible for financing as part of the mortgage is either 5 percent of the property's value (not to exceed \$8,000) or \$4,000--whichever is greater. The improvements can be included in a borrower's mortgage only if the total cost is less than the total dollar value of the energy that will be saved during their useful life.

The Streamlined (k) Limited Repair Program augments FHA's existing Section 203(k) rehabilitation program for less extensive repairs and improvement and is designed to make the program more reflective of the desire of many homebuyers and existing homeowners to improve their homes including making them more energy efficient. The Streamline K program permits increased maximum mortgage amounts for repair or rehabilitation costs up to \$35,000.

The Streamlined (k) program includes the discretionary improvements and/or repairs shown below:

- Repair/Replacement of roofs, gutters and downspouts
- Repair/Replacement/upgrade of existing HVAC systems
- Repair/Replacement/upgrade of plumbing and electrical systems
- Repair/Replacement of flooring
- Minor remodeling, such as kitchens, which does not involve structural repairs
- Painting, both exterior and interior
- Weatherization, including storm windows and doors, insulation, weather stripping, etc.
- Purchase and installation of appliances, including free-standing ranges, refrigerators, washers/dryers, dishwashers and microwave ovens
- Accessibility improvements for persons with disabilities
- Lead-based paint stabilization or abatement of lead-based paint hazards

- Repair/replace/add exterior decks, patios, porches
- Basement finishing and remodeling, which does not involve structural repairs
- Basement waterproofing
- Window and door replacements and exterior wall re-siding
- Septic system and/or well repair or replacement.

5.5. Department of Energy—Weatherization Assistance Program

The Department of Energy’s Weatherization Assistance Program (WAP) is administered by State agencies and delivered by Community Service Agencies. The Weatherization Assistance Program provides no cost, directly installed weatherization services to low-income households to improve the energy efficiency.

The weatherization measures must be cost-effective and are set on the basis of an energy audit. Typical measures provided through this program include:

- Adding thermal insulation to the residential building envelope, most typically attic insulation
- Shading sun-exposed windows, primarily for houses using central refrigeration cooling
- Implementing air leak control measures to reduce excessive infiltration of outside air
- Testing, tuning and maintaining heating and cooling equipment
- Reducing duct leakage where heating and central refrigerated air is distributed by a forced air system
- Installing low-flow showerheads and other general energy and water efficiency measures
- Other energy conservation improvements as identified by the home energy auditor.

Household incomes must be 175% or less federal poverty guidelines; senior/disabled households must be 200% or less federal poverty guidelines. WAP provides funding and technical guidance to states who partner with nonprofit agencies to deliver weatherization assistance.

For additional information contact the agencies below:

State	Agency	Web Site
Arizona	Department of Commerce, Energy Division	www.azdes.gov/csa/programs/uap/default.asp www.azcommerce.com/Energy/Weatherization.htm
California	Department of Community Services and Development	www.csd.ca.gov/
Nevada	Nevada Housing Division	www.nvhousing.state.nv.us/weatherization/weatherization

5.6. Federal Tax Credits for Investments in Energy Efficiency

The Energy Policy Act includes several programs providing individuals and businesses with tax credits to encourage investments in energy efficiency. Below is a summary of some kept provision providing tax credits which may be used in conjunction with new construction and rehabilitation projects.

Information on these initiatives is available at www.energytaxincentives.org.

5.6.1. Energy efficient New Home Construction Credit

Contractors constructing new energy efficient homes are eligible for a new credit of \$2,000 per dwelling unit. The dwelling unit must be certified to have an annual heating and cooling energy consumption that is at least 50 percent below that of a comparable dwelling unit constructed to 2004 Supplement to the 2003 IECC standards. Building envelope component improvements must account for at least 10% of the reduction. The new energy efficient home must be sold by the contractor to a person for use as a residence during the tax year. The credit only applies to new home construction. However, the definition of "construction" for this purpose includes substantial reconstruction and rehabilitation.

Refer to IRS Guidance - Notice 2006-27 for details and requirements that must be satisfied before claiming the Energy efficient New Home Construction Tax Credit.

5.6.2. Energy Efficient Home Improvement Tax Credit

This tax credit applies to the purchase of significant energy-efficiency improvements and property. The credit is equal to the sum of (1) 10-percent of significant energy efficiency improvements to existing homes and (2) residential energy property expenditures. The maximum amount of the credit allowable to a taxpayer is \$500 (\$200 in the case of amounts paid or incurred for exterior windows (including storm windows and skylights)). The taxpayer's basis in the property is reduced by the amount of the credit.

The energy efficiency improvement must be expected to remain in use for at least 5 years.

Generally, the following improvements, if they satisfy certain energy conservation codes, qualify for the 10-percent credit for energy efficient building envelope components:

- Any insulation material or system primarily designed to reduce heat loss or gain.
- Exterior windows, including skylights, and doors. No more than \$200 of the \$500 allowed in total across all tax years may be attributable to window expenditures.
- Metal roofs coated with heat-reducing pigments.

Refer to IRS Guidance - Notice 2006-26 for details and requirements that must be satisfied before claiming the Energy Efficient Home Improvement Tax Credit. In addition, differing amounts of credit are given for energy efficient property described in section 5.01 (1)-(7) of this notice

5.6.3. Renewable Energy Efficient Tax Credits

Individuals that install solar hot water, photovoltaic (electricity-generating solar) equipment or fuel cell property in their homes are eligible for a new 30% tax credit up to a maximum credit for any tax year is \$2,000 for solar water heating equipment, \$2,000 for photovoltaic property, and \$500 with respect to each 0.5 kilowatt of capacity for fuel cell property. The Renewable Energy Efficient Tax Credit for commercial buildings, including multifamily property is 30% of the system costs without the cap.

Taxpayers can include labor costs allocable to on-site preparation, assembly, or original installation of the property. The taxpayer's basis in the property is reduced

5.7. Low Income Energy Assistance Program

LIHEAP is a block grant program administered by the Office of Community Services to help eligible low income homeowners and renters meet their home heating and/or cooling needs. Each year it allocates approximately \$2 billion in formula grants among the States, territories, and Indian tribes.

5.8. Low Income Housing Tax Credit Program

The Low Income Housing Tax Credit (LIHTC) program provides the private market with an incentive to invest in affordable rental housing. Federal housing tax credits are awarded to developers of qualified projects. Developers then sell these credits to investors to raise capital or equity for their projects, which reduces the debt that the developer would otherwise have to borrow. Because the debt is lower, a tax credit property can in turn offer lower, more affordable rents. Each of the LIHTC programs in Arizona, California, and Nevada provide important guidelines and incentives for developing energy efficient affordable housing.

In Nevada, achieving ENERGY STAR Construction Standards is a threshold requirement for all affordable housing tax credit projects in the state. Nevada's guidelines, included in their Qualified Allocation Plans, provide a useful model for jurisdictions wishing to adopt similar ENERGY STAR requirements and preferences.

In California, the California Tax Credit Allocation Committee includes several incentives for advance above code energy efficient projects. California's LIHTC guidelines require Energy Star appliance as part of their minimum building specifications and offer additional preference points to applicants that include additional energy efficiency and green building measures in their proposals. California's LIHTC program also provides an increase to the eligible project basis for proposals include renewable energy technologies and achieving ENERGY STAR construction. These preferences can useful examples on how local jurisdictions can provide incentives for encouraging more energy efficient projects.

In Arizona, the State Housing Department requires additional prescriptive measures inclusive of inspection and verification requirements that ensure quality installation of energy efficiency measures. Arizona's guidelines which emphasize getting the basic right have ensured that LIHTC projects routinely exceed state ENERGY STAR standards.

5.9. Nonprofits and Foundations

5.9.1. *Local Initiatives Support Corporation*

LISC provides loans, lines of credit, grants and recoverable grants, and equity investments to help CDCs and other partners revitalize their neighborhoods.

5.9.2. *Enterprise Green Communities*

Green Communities is a five-year, \$555 million initiative to build more than 8,500 environmentally healthy homes for low-income families. The initiative offers grants to help cover the costs of green components in affordable housing developments — improvements that increase the profitability, productivity, or usefulness of a property while preserving the quality of the environment. Public housing authorities and tribally designated housing entities are eligible for assistance through this program. Financing can include below-market-rate acquisition and predevelopment loans and competitively priced tax credit equity.

5.9.3. *MacArthur Foundation*

The John D. and Catherine T. MacArthur Foundation announced in late 2003 a new initiative aimed at preserving affordable rental housing. The initiative will provide \$50 million in grants and program-related investments over the next five years to help preserve and improve the nation's stock of affordable rental housing. Among those eligible for grants are nonprofit rental housing owners seeking assistance with strengthening and expanding their operations.

5.9.4. The Alliance to Save Energy

The Alliance to Save Energy is a non-profit coalition of business, government, environmental and consumer leaders that support energy efficiency as a cost-effective energy resource under existing market conditions and advocates energy-efficiency policies that minimize costs to society and individual consumers, and that lessen greenhouse gas emissions and their impact on the global climate. To carry out its mission, the Alliance to Save Energy undertakes research, educational programs, and policy advocacy, designs, and implements energy-efficiency projects, promotes technology development and deployment, and builds public-private partnerships, in the U.S. and other countries. Sorted by state, their website lists state tax credits, energy efficiency codes, funds, and energy saving tips.

5.10. Database for State Incentives for Renewable Energy

Many energy efficiency and green building programs can also be found in the Database for State Incentives for Renewable Energy (DSIRE). This gives an overall summary by state of the programs that are available to promote energy related programs as well as what incentive programs other local governments have implemented to reduce dependence on fossil fuels. This site can inform local governments looking for resources provided by the state to promote energy efficiency and serve as a clearinghouse of information about what other governments in the state are doing. These programs can serve as models for incentive programs that are taking place throughout the state.

6. Renewable Energy Programs and HOME

Renewable energy sources are energy efficient and have the environmental advantage of utilizing non-carbon based fuel as a primary source of energy. These renewable energy systems often have a high initial cost, which may make them less attractive, but their long-term energy savings are generally substantial. Sources of renewable energy include solar, wind, biomass, biogas, and geothermal generated power and all are used in California, Arizona, and Nevada.

Because of the upfront costs and the large infrastructure and equipment requirements for renewable energy sources, governments have adopted requirements for renewable energy largely targeted to utility companies. In Nevada, utilities must now generate or acquire energy from renewable energy sources or achieve savings from energy efficiency equal to 6 percent of their electricity sales, with energy efficiency providing at most a quarter of the requirement. By 2015 this requirement will be 20%. Additionally, the State developed a Solar Energy Systems Demonstration Program—providing solar power systems to schools, public buildings, private residences, and small businesses.⁵ Likewise Arizona's Renewable Energy Standard requires utilities derive 15% of their power from renewable sources and California's Renewable Portfolio Standard Program requires 20% of the state's energy come from renewable sources by 2010 and 33% by 2020.

In addition to requirements for utility companies, the states have created programs encouraging private households to supplement the energy received through utilities with distributed generation - residential or non-utility owned installations. Arizona offers utility rebates or state and federal tax breaks that offset some of the upfront costs for installing distributed generation installations -- such as a large solar installation on the roof of a shopping mall or solar panels at someone's home.⁶ Likewise, California initiated the New Solar Homes Partnership in 2007, earmarking \$350 million for the construction of new residential buildings that rely on solar energy and creating incentives for owners of existing residential

⁵ U.S. Department of Energy, http://www.eere.energy.gov/states/news_detail.cfm/news_id=9149, June 29, 2005.

⁶ Energy Access.com "Arizona Passes 15 Percent Renewable Energy Standard." <http://www.renewableenergyaccess.com/rea/news/story?id=44229> March 2006

units to incorporate distributed generation installations into their homes.⁷ The program offers rebates and cash back to home-owners and developers installing solar panels, as well as funds to encourage organizations to install solar panels on homes occupied by low-income residents, and a pay-for-performance incentive structure to reward high-performing solar projects.⁸

7. Green Building Programs and Practices

Green building practices conserve resources in the demolition and construction stages of development as well as promoting systems and measures and systems within the unit that conserve resources and facilitate a higher quality indoor environment for residents.

Building energy efficient buildings is a critical component of 'building green' as reducing energy consumption is more resource efficient and is good for the environment. However, in addition to energy consumption, other factors in green building include:

- **Water:** Designing and operating buildings to use water efficiently.
- **Materials:** Using building materials that, in comparison to competing brands, have a reduced effect on the environment throughout their life cycle (e.g. recycled content, low toxicity, energy efficiency, biodegradability, and/or durability).
- **Waste:** Reducing the waste from construction, remodeling, and demolition.
- **Indoor Environment:** Designing and operating buildings that are healthy for their occupants.⁹

The Leadership in Energy and Environmental Design (LEED) Program, established by the U.S. Green Building Council, takes a whole building approach to address the entire regimen of green building practice areas. The LEED program prioritizes five categories of performance: Sustainable Sites, Energy and Atmosphere, Water Efficiency, Indoor Environmental Quality, and Materials and Resources. A building may be certified as a LEED building or, as with the ENERGY STAR program, LEED guidelines may influence what a PJ requires from projects they fund. In California, Governor Schwarzenegger's Green Building Executive Order (GBEO), or Green Building Initiative, requires state-owned facilities to be designed, constructed, operated, and renovated as "LEED Silver" or higher certified buildings.

Like the ENERGY STAR program, widely accepted green building practices are promoted at the local level through partnerships between builders and local governments. Programs such as the California Green Builder and Build it Green in California provide resources for builders to create sustainable buildings.¹⁰ In Nevada, Governor Guinn passed a tax credit for buildings earning the LEED Silver or higher certification and tax abatement on the building products and materials used in those buildings.

⁷ California Energy Commission, <http://www.energy.ca.gov/renewables/index.html> December 2007

⁸ The California Solar Initiative, <http://www.gosolarcalifornia.ca.gov/csi/index.html> January 2008

⁹ <http://www.cicacenter.org/gbover.html> September 28, 2007

¹⁰ The California Green Builder program: <http://www.cagrconbuilder.org/>; Build it green: www.builditgreen.org.

**Part 2: Northern California,
State of Nevada, and State of Arizona
Specific Energy Efficiency
Recommendations**

Incorporating Energy Efficiency Into HOME-Funded Affordable Housing Development
Part 2: Northern California, State of Nevada, & State of Arizona Specific Energy Efficiency Recommendations

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1. Explanation of Recommendations

Part two of this manual consists of several series of efficiency recommendations that apply to the territories within the Northern California HUD Field office, including Northern California, the State of Nevada, and the State of Arizona. These recommendations were determined using DEER and represent a point in time snapshot of the most pertinent efficiency measures PJs might consider implementing in their programs at this time. As innovations in products, systems, and alternative sources of energy occur, these recommendation are likely to become outdated. If climate change continues, the weather sensitive components of this part of the manual could lose relevance as the weather patterns in the climate zones to which they pertain change. This part of the manual is broken into two major sub-sections: Recommendations for Non-Weather Sensitive Systems and recommendations for Weather Sensitive Systems.

1.1. Non-Weather Sensitive Explanations

Non-weather sensitive efficiency measures will save the same amount of energy regardless of the climate zone in which they are installed and are useful measures to implement in any climate zone. For instance, households run a dishwasher (an appliance) at the same frequency regardless of the climate in which they live and dishwashers consume the same amount of electricity regardless of the climate. Non-Weather Sensitive Systems consist of 4 major areas:

- Lighting
- Appliances
- Hot Water
- Motors.

The financial savings associated with these measures will differ from community to community somewhat, depending upon the cost of energy in that community. The measures in this section tend only to use electricity and the savings in this section are based on an average electricity costs within the areas analyzed (12 cents per kWh). If electricity costs differ in communities, actual savings will increase or decrease accordingly.

1.2. Weather Sensitive Explanations

Converse to Non-Weather Sensitive Systems, Weather Sensitive Systems consist of measures which are directly affected by weather patterns and will achieve different energy savings depending on the climate in which they are incorporated. For instance, households in a cold-weather climate will run a heating unit more frequently than those in a warm-weather climate and a heating unit will consume more energy as a direct function of how cold the air is. Weather Sensitive Systems consist of 2 major areas:

- Shell
- Heating Ventilation and Cooling (HVAC).

Within the Weather Sensitive sub-section, recommendations are further broken out according to the major climate regions in the Northern California HUD Field Office territory as follows:

- CA Central Valley Climate Zone -- DEER zones 11 and 12
- CA Bay Area Climate Zone -- DEER zone 3
- Mountainous Climate Zone -- DEER zone 16
- Desert Climate Zone -- DEER zone 14 and 15.

The climate zones referenced by DEER are not common climate zones such as desert or alpine. The 16 climate zones that the California Energy Commission established use data about climate and weather in the area as well as the energy use and behavior of people in that area to distinguish between different climate zones. "The Energy Commission established 16 climate zones that represent a geographic area for which an energy budget is established. These energy budgets are the basis for the standards.... (An) energy budget is the maximum amount of energy that a building, or portion of a building...can be designed to consume per year."¹¹ This creates a much more nuanced differentiation than that which is generally applied based on average daily temperature. Based on the energy budget for a prototypical city, DEER compares the savings associated with efficiency measures and how they would reduce energy consumption in that climate zone. The following lists key climate zones in California, some of which extend into Arizona and Nevada, and the efficiency measures that are recommended based on their climate and consumption habits.

1.2.1. CA Central Valley Climate Zones

The California Central Valley comprises 2 climate zones. It extends as far south as Wheeler Ridge and north up to Coloma and Placerville and spans west almost to the bay area and east to the base of the Sierra Nevada foothills. The prototypical cities of the Central Valley are Sacramento in the north and Fresno in the south. The climate is marked with long hot summers and light freezes in winter. Rain tends to fall in the cooler months. Homes generally use both air conditioning and heating units, although the climate is mild enough that heat pumps would probably be appropriate.

1.2.2. Bay Area Climate Zone

The California Bay Area climate zone is one of the most populous climate zones in the State. It runs along the Pacific Ocean north to Point Reyes in Marin County and south into Santa Cruz County, just north of San Simeon. Oakland is considered the typical weather city marked by damp, mild weather year round. Communities in this climate zone tend not to drop below freezing or exceed 75 degrees Fahrenheit; rarely, if ever, are air conditioning units included in homes.

1.2.3. Mountainous Climate Zone

The mountainous climate zone in CA is the largest zone in the state and runs the entirety of the Sierra Nevada mountain range south into Los Angeles County along the eastern border of the State and extending across almost the entire northern border of the State, stopping short of the coast. The prototypical weather designation for the mountainous climate zone is the Mt. Shasta Weather Station. The climate zone is marked by some precipitation and some variances in temperatures between seasons, although it can always be cold at night, with the potential for frost any given night of the year. The days are usually warm in the summer but intensely cold in the winter, commonly dropping to temperatures well below freezing. Most communities in Nevada and many in northern and eastern Arizona are designated with a mountainous climate zone. Heating systems are essential in this climate zone, although ceiling fans may be appropriate in lieu of central air conditioners.

1.2.4. Desert Climate Zone (Typical of CA, AZ, NV)

The California desert climate zone comprises the southeastern border of the State and, like the Central Valley climate zone, consists of 2 Energy Commission climate zones. Together the climate zones extend north into Death Valley in Inyo County and south to the border and into Mexico. The prototypical weather cities are China Lake and El Centro. Both are marked by extremely dry, hot weather in the

¹¹ California energy Commission, California Building Climate Zones. http://www.energy.ca.gov/maps/climate_zone_map.html.

summer, often exceeding 100 degrees Fahrenheit while winters typically include light freezes. Most southern and western Arizona communities extending east to Tucson fall within a desert climate zone. Both air conditioning and heating systems are necessary in homes in this climate zone.

1.3. Interpreting the Tables

The following tables hold the recommendations for efficiency measures to consider incorporating into specific projects broken out as explained above. Within each Section recommendations are separated according to 4 project types:

- Single Family New Construction/Major Rehab
- Single Family Minor Rehab
- Multi Family New Construction/Major Rehab
- Multi Family Minor Rehab.

Within each of these categories the recommended measure and the technology that it replaces is described. The tables also include the estimated amount of time (in years) until the savings achieved by that measure, through reduced energy consumption and reduced energy bills, pay back its initial cost. Two payback schemes are offered: simple payback applies if the measure was bought outright to replace a functioning piece of technology that already served the purpose of the measure (as if a CFL bulb replaced a working incandescent bulb) and replace on fail payback applying if the efficiency measure was purchased and installed either upon the failure of technology that served the same purpose and needed replacement or if there was no technology already serving that purpose (as if a standard water heater broke and a efficient heater replaced it). Simple payback is calculated by dividing the full cost of the measure by the average annual savings achieved by that measure, while replace on fail payback divides the cost of the measure less the cost of purchasing another of the less efficient technology to replace the one that failed by the annual savings associated with the efficient measure. In every table, one of the two pay back cells is shaded green. The green shading indicates the recommended stage to implement the efficiency measure. Additionally, the base cost of the measure is given as well as any notes about the measure.

2. Non-Weather Sensitive Efficiency Recommendations

SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB

SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB		Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
New Technology	Base Technology				
Lighting					
Screw-in CFL—Exterior	Incandescent Bulb		0.78–1.34		
Screw-in CFL—Interior	Incandescent Bulb		1.04–1.77	\$8-\$14	Lower wattage CFLs have longer payback because their up-front costs are not much lower than higher wattage CFLs while their total savings aren't as large.
Occ-Sensor—Wall/box	No Occupancy Sensor			\$77.28	Assumes sensor controls 4 34W T8 lamps
Hard-wired CFL—Exterior	Incandescent Bulb		2.0–4.5	\$45-65.75	Lower wattage CFLs have longer payback because their up-front costs are not much lower than higher wattage CFLs while their total savings aren't as large.
Hard-wired CFL—Interior	Incandescent Bulb		2.9–7.2	\$45-65.75	
Appliances					
ENERGY STAR Dish Washer—EF 0.58	Standard Efficiency Dish Washer—EF 0.46	33.6		\$133.64	
ENERGY STAR Clothes Washer Tier 2 High Efficiency	Standard Efficiency Clothes Washer, electric water heat and electric dryer	24.3		\$548.99	
ENERGY STAR Refrigerator	Standard Efficiency Refrigerator	127.1		\$107.89	Payback is somewhat misleading, as replacing older refrigerators would result in larger savings.
ENERGY STAR Clothes Washer Tier 2 High Efficiency	Standard Efficiency Clothes Washer, gas water heat and gas dryer	84.8		\$548.99	

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SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
Hot Water					
Faucet Aerators	No Faucet Aerators			\$29.20	Assumes 3.5 faucets per house
High Efficiency Electric Water Heater—EF 0.93	Electric water heater, EF=0.88	16.6		\$72.30	
Heat Pump Water Heater—EF 2.9	Electric water heater, EF=0.88	6.6		\$1,288.02	
Pipe Wrap	No pipe wrap			\$98.32	Assumes 50 ft of pipe insulation per house
Point of Use Water Heat	Gas Water Heater EF=0.594	40.9		\$370.64	
High Efficiency Gas Water Heater—EF 0.63	Gas water heater, EF=0.60	60.6		\$175.30	
Motors					
Efficient Single Speed Pool Pump	Inefficient Single Speed Pool Pump		0.7	\$753.06	
Efficient Two Speed Pool Pump	Inefficient Single Speed Pool Pump		1.1	\$884.33	

SINGLE FAMILY MODERATE / MINOR REHAB

SINGLE FAMILY MINOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
Lighting					
Screw-in CFL—Exterior	Incandescent Bulb		0.78– 1.34	\$8-\$14	Lower wattage CFLs have longer payback because their up-front costs are not much lower than higher wattage CFLs while their total savings aren't as large.
Screw-in CFL—Interior	Incandescent Bulb		1.04– 1.77		
Hot Water					
Low Flow Showerhead	Standard showerhead			\$37.95	
Hot Water Blanket	No hot water blanket			\$17.00	
Faucet Aerators	No Faucet Aerators			\$29.20	Assumes 3.5 faucets per house

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MULTI FAMILY NEW CONSTRUCTION / MAJOR REHAB

MULTIFAMILY NEW CONSTRUCTION / MAJOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
Lighting					
180W Low-Pressure Sodium Lamp	400W Mercury Vapor		0.7	\$142.46	
175W PS Metal Halide	500W Incandescent		0.9	\$196.86	
200W High-Pressure Sodium Lamp	400W Mercury Vapor		0.9	\$358.89	
Screw-in CFL-Exterior	Incandescent Bulb		0.78-1.34	\$8-\$14	Lower wattage CFLs have longer payback because their up-front costs are not much lower than higher wattage CFLs while their total savings aren't as large.
Screw-in CFL-Interior	Incandescent Bulb		1.04-1.77		
T8 Lamps w/ Electronic Ballasts	T12 Lamps w/ Magnetic Ballasts		0.21-1.11	\$53-\$69	Payback varies based on the number of lamps in a fixture, length of lamps, and number of ballasts used to power lamps.
250W PS Metal Halide	400W Mercury Vapor		1.9	\$219.92	
Occ. Sensor-Wallbox	No Occupancy Sensor			\$77.28	Assumes sensor controls 4 34W T8 lamps.
Timeclock	No Timeclock			\$239.89	
Photocell	No Photocell			\$59.81	Assumes photocell controls 4 70W HPS lamps in conjunction with timeclock. Photocell keeps exterior lights while there is sufficient daylighting.
175W PS Metal Halide	250W Metal Halide		3.1	\$196.86	
Hard-wired CFL-Exterior	Incandescent Bulb		2.0-4.5	\$45-\$65.75	Lower wattage CFLs have longer payback because their up-front costs are not much lower than higher wattage CFLs while their total savings aren't as large.

**Incorporating Energy Efficiency into HOME-Funded Affordable Housing Development
Part 2: Northern California, State of Nevada, & State of Arizona Specific Energy Efficiency Recommendations**

MULTIFAMILY NEW CONSTRUCTION / MAJOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
Hard-wired CFL-Interior	Incandescent Bulb		2.9-7.2		
Appliances					
Vending Machine Controller	Uncontrolled Cold Drink Vending Machine			\$215.50	
Vending Machine Controller	Uncontrolled Uncooled Snack Machine			\$198.00	
ENERGY STAR Clothes Washer-Tier 2 High Efficiency-Multi-Family Common Use	Standard Efficiency Clothes Washer, electric water heat and electric dryer	8.1		\$548.99	Conservatively assuming that coin-operated clothes washers are used three times as much as clothes washers in single family homes.
ENERGY STAR Dish Washer-EF 0-38	Standard Efficiency Dish Washer-EF 0-46	33.6		\$133.64	
ENERGY STAR Clothes Washer-Tier 2 High Efficiency	Standard Efficiency Clothes Washer, electric water heat and electric dryer	24.3		\$548.99	
ENERGY STAR Clothes Washer-Tier 2 High Efficiency-Multi-Family Common Use	Standard Efficiency Clothes Washer, gas water heat and gas dryer	28.3		\$548.99	Conservatively assuming that coin-operated clothes washers are used three times as much as clothes washers in single family homes.
ENERGY STAR Refrigerator	Standard Efficiency Refrigerator	127.1		\$107.89	Payback is somewhat misleading, as replacing older refrigerators would result in larger savings.
ENERGY STAR Clothes Washer-Tier 2 High Efficiency	Standard Efficiency Clothes Washer, gas water heat and gas dryer	84.8		\$548.99	
Hot Water					

Incorporating Energy Efficiency into HOME-Funded Affordable Housing Development
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MULTIFAMILY NEW CONSTRUCTION / MAJOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
Circulation Pump Timeclock	No Timeclock, Gas Water Heater EF=0.594			\$224.27	
Faucet/Aerators	No Faucet Aerators			\$29.20	Assumes 2.3 faucets per household
Pipe Wrap	No pipe wrap			\$98.32	Assumes 35 ft of pipe insulation per household
High Efficiency Electric Water Heater-EF 0.93	Electric water heater, EF=0.88	31.8		\$72.30	
Heat Pump Water Heater-EF 2.9	Electric water heater, EF=0.88	12.6		\$1288.02	
Point of Use Water Heat	Gas Water Heater EF=0.594	45.5		\$370.64	
High Efficiency Gas Water Heater-EF 0.63	Gas water heater, EF=0.60	67.5		\$175.30	
Motors					
Efficient Single Speed Pool Pump	Inefficient Single Speed Pool Pump		0.7	\$753.06	
Efficient Two Speed Pool Pump	Inefficient Single Speed Pool Pump		1.1	\$884.33	

MULTI FAMILY MODERATE / MINOR REHAB

MULTIFAMILY MINOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Type of Residence	Comments
Lighting					
De-lamp 8, 4 lamp/fixture	Eight 4 lamp/fixture			\$25.84	Only should be done if an area has excess lighting
De-lamp 4, 4 lamp/fixture	Four 4 lamp/fixture			\$25.74	
LED Exit Sign Retrofit Kit	Incandescent Exit Sign			\$50.58	
180W Low Pressure Sodium Lamp	400W Mercury Vapor			\$142.46	
175W PS Metal Halide	500W Incandescent			\$196.86	
LED Exit Sign (New)	Incandescent Exit Sign			\$65.44	
200W High Pressure Sodium Lamp	400W Mercury Vapor			\$158.89	
Screw-in CFL- Exterior	Incandescent Bulb	0.78-1.34		\$8-\$14	Lower wattage CFLs have longer payback because their up-front costs are not much lower than higher wattage CFLs while their total savings aren't as large.
Screw-in CFL- Interior	Incandescent Bulb	1.04-1.77			
T8 Lamps w/ Electronic Ballasts	T12 Lamps w/ Magnetic Ballasts	0.21-1.11		\$53-\$69	Payback varies based on the number of lamps in a fixture, length of lamps, and number of ballasts used to power lamps.
250W PS Metal Halide	400W Mercury Vapor				
Appliances					
Vending Machine Controller	Uncontrolled Cold Drink Vending Machine				
Vending Machine Controller	Uncontrolled Uncooled Snack Machine			\$108.00	

MULTIFAMILY MINOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Type of Residence	Comments
Hot Water					
Circulation Pump Timeclock	No Timeclock, Gas Water Heater EF=0.594			\$224.27	
Low Flow Showerhead	Standard showerhead			\$37.95	
Faucet Aerators	No Faucet Aerators			\$29.20	Assumes 2.3 faucets per household

3. Weather Sensitive Efficiency Recommendations

3.1. California Central Valley Climate Zone

LIST OF COMMUNITIES IN THIS CLIMATE ZONE

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> • Antioch • Bakersfield • Carmichael • Citrus Heights • Clovis • Concord • Danville • Davis • Delano • Elk Grove • Folsom • Fresno | <ul style="list-style-type: none"> • Hanford • Lemoore • Livermore • Lodi • Madera • Manteca • Merced • Modesto • Moraga • Pleasanton • Porterville • Rancho Cordova | <ul style="list-style-type: none"> • Riverbank • Sacramento • Stockton • Tracy • Tulare • Turlock • Vacaville • Visalia • Walnut Creek • West Sacramento • Woodland |
|---|--|--|

SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB

SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
Shell					
U-0.25 / SHGC-0.35 (clear) Window	U-1.09 / SHGC-0.80 (clear) Window	86.1		\$00	The cost with installation is \$1,555 per 100 sq. ft. but this is assumed to be equal to the installation costs of non-efficient windows
		91.3			
U-0.25 / SHGC-0.22 (tint) Window	U-1.09 / SHGC-0.80 (clear) Window	106.0		\$208.98	Installation costs are \$2,058 per 100 sq. ft. but this is assumed to be equal to minimum efficiency windows
		122.2			
Ceiling Vmage to R-49 Insulation-Batts	Per prototype description	204.4		\$137.20	
		204.7			
HVAC					
High Refrigerant Charge Adjustment (>= ±20% rated charge)	Cooling Performance degraded based on improper refrigerant charge			\$46.33	Savings varies depending on number of AC days in climate region.
Typical Refrigerant Charge Adjustment (< ±20% rated charge)	Cooling Performance degraded based on improper refrigerant charge			\$38.36	Savings varies depending on number of AC days in climate region.
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20%/16/4% of AHU flow			\$183.15	
15 SEER (12.70 EER) / 8.8 HSPF (3.74 COP) A/C Heat Pump	13.0 SEER / 8.1 HSPF Split System Heat Pump	65.7		\$340.42	
		75.7			
Condensing 96 AFUE (1.03 HIR) Furnace	78 AFUE Furnace	42.8		\$312.35	
		59.8			

**Incorporating Energy Efficiency into HOME-Funded Affordable Housing Development
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SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply/return/OA leakage 12/9.6/2.4% of AHU flow			\$183.15	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 12 cents/kWh and Gas: 8.1 cents/kBtu)

SINGLE FAMILY MODERATE / MINOR REHAB

SINGLE FAMILY MINOR REHAB					
New Technology	Base Technology	Simple Payback	Replace on Fail Payback	Cost of Measure	Comments
HVAC High Refrigerant Charge Adjustment (±20% rated charge)	Cooling Performance degraded based on improper refrigerant charge			\$46.33	Savings varies depending on number of AC days in climate region

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 12 cents/kWh and Gas: 8.1 cents/kBtu)

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MULTI FAMILY NEW CONSTRUCTION / MAJOR REHAB

MULTIFAMILY NEW CONSTRUCTION / MAJOR REHAB

New Technology	Base Technology	Simple Payback (years)	Replace or Fail Payback (years)	Cost of Measure	Comments
Shell					
U-0.25 / SHGC-0.35 (clear) Window	Standard Efficiency Windows U-0.57 / SHGC-0.40	61.9 71.7		\$00	Installation costs are \$1,555 per 100 sq. ft. but this is assumed to be equal to minimum efficiency windows
U-0.25 / SHGC-0.22 (tint) Window	Standard Efficiency Windows U-0.57 / SHGC-0.40	79.8 96.0		\$209.88	Installation costs are \$2,058 per 100 sq. ft. but this is assumed to be equal to minimum efficiency windows
Ceiling: Vintage to R-49 insulation-Batts	Per prototype description	144.2 147.3		\$137.20	
HVAC					
High Refrigerant Charge Adjustment (>= ±20% rated charge)	Cooling Performance degraded based on improper refrigerant charge			\$46.33	Savings varies depending on number of AC days in climate region.
Typical Refrigerant Charge Adjustment (< ±20% rated charge)	Cooling Performance degraded based on improper refrigerant charge			\$38.36	Savings varies depending on number of AC days in climate region.
15 SEER (12.70 EER) / 8.8 HSPF (3.74 COP) A/C Heat Pump	13.0 SEER / 8.1 HSPF Split-System Heat Pump	43.0 57.9		340.02	
Condensing 96 AFUE (1.03 HIR) Furnace	73 AFUE Furnace	46.2 49.3		\$312.35	
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20%/16%/4% of AHU flow			\$183.15	

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MULTIFAMILY NEW CONSTRUCTION / MAJOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply/return/OA leakage 12/9.6/2.4% of AHU flow			\$183.15	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 12 cents/kWh and Gas: 8.1 cents/kBtu)

MULTI FAMILY MODERATE / MINOR REHAB

MULTIFAMILY MINOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Type of Residence	Comments
High Refrigerant Charge Adjustment (>= ±20% rated charge)	Cooling Performance degraded based on improper refrigerant charge			\$46.33	Savings varies depending on number of AC days in climate region.

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 12 cents/kWh and Gas: 8.1 cents/kBtu)

3.2. Bay Area Climate Zone

LIST OF COMMUNITIES IN THIS CLIMATE ZONE

- Aptos
- Belmont
- Berkeley
- Burlingame
- Carmel
- Castro Valley
- Corte Madera
- Daly city
- El Sobrante
- Emeryville
- Fremont
- Hayward
- Menlo Park
- Mill Valley
- Millbrae
- Monterey
- Oakland
- Pacifica
- Redwood City
- Richmond
- Salinas
- San Bruno
- San Carlos
- San Francisco
- San Leandro
- San Mateo
- Santa Cruz
- Sausalito
- Scotts Valley
- South San Francisco
- Vallejo
- Watsonville

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SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB

SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB					
<i>New Technology</i>	<i>Base Technology</i>	<i>Simple Payback (years)</i>	<i>Replace on Fail Payback (years)</i>	<i>Cost of Measure</i>	<i>Comments</i>
Shell					
U-0.50 / SHGC-0.65 (clear) Window	U-0.67 / SHGC-0.79 (clear) Window		0.08	\$19.20	
U-0.50 / SHGC-0.40 (tint) Window	U-0.67 / SHGC-0.79 (clear) Window	14.62		\$28.86	
U-0.40 / SHGC-0.65 (clear) Window	U-0.67 / SHGC-0.79 (clear) Window		0.00	\$13.10	
U-0.40 / SHGC-0.40 (tint) Window	U-0.67 / SHGC-0.79 (clear) Window		0.52	\$22.77	
U-0.35 / SHGC-0.55 (clear) Window	U-0.67 / SHGC-0.79 (clear) Window		0.00	\$13.92	Costs of measures decline significantly when compared with the cost and installation of standard non-efficient windows. (\$16.41 per sq ft)
U-0.35 / SHGC-0.32 (tint) Window	U-0.67 / SHGC-0.79 (clear) Window		0.62	\$22.81	
U-0.25 / SHGC-0.35 (clear) Window	U-0.67 / SHGC-0.79 (clear) Window		0.00	\$15.55	
U-0.25 / SHGC-0.22 (tint) Window	U-0.67 / SHGC-0.79 (clear) Window		0.29	\$20.58	
Ceiling R-0 to R-38 Insulation-Batts	R-0 Ceiling Insulation		0.00	\$0.86	
Ceiling Vitrage to R-49 Insulation-Batts	Per prototype description		0.05	\$0.86	
HVAC					
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20/16/4% of AHU flow		0.00	\$107.91	
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply/return/OA leakage 12/9/6/2-4% of AHU flow	23.29		\$107.91	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 16 cents/kWh and Gas: .9 cents/kBtu)

SINGLE FAMILY MODERATE / MINOR REHAB

SINGLE FAMILY MINOR REHAB		Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
New Technology	Base Technology				
Shell					
U-0.50 / SHGC-0.65 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.06	\$19.20	
U-0.50 / SHGC-0.40 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.94	\$28.86	
U-0.40 / SHGC-0.65 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$13.10	
U-0.40 / SHGC-0.40 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.25	\$22.77	
U-0.35 / SHGC-0.55 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$13.92	
U-0.35 / SHGC-0.32 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.24	\$22.81	
U-0.25 / SHGC-0.35 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$15.55	
U-0.25 / SHGC-0.22 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.10	\$20.58	
Single Pane Clear Glass With Spectrally Selective Film	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$2.70	
Low-Income Weatherization w/ Evaporative Cooler	Direct Evap Cooling with Infiltration of 0.47 Air Changes per Hour		0.00	\$0.00	Direct Evap Cooling with Infiltration of 0.35 Air Changes per Hour
Low-Income Weatherization w/out Evaporative Cooler	Infiltration of 0.45 Air Changes per Hour		0.00	\$0.00	Infiltration of 0.35 Air Changes per Hour
HVAC					
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20/16/4% of AHU flow		0.00	\$107.91	
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply/return/OA leakage 20/16/4% of AHU flow		0.00	\$107.91	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 16 cents/kWh and Gas: 9 cents/kBtu)

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MULTIFAMILY NEW CONSTRUCTION / MAJOR REHAB

MULTIFAMILY NEW CONSTRUCTION / MAJOR REHAB		<i>Simple Payback (years)</i>	<i>Replace on Fail Payback (years)</i>	<i>Cost of Measure</i>	<i>Comments</i>
<i>New Technology</i>	<i>Base Technology</i>				
Shell					
U-0.50 / SHGC-0.65 (clear) Window	U-0.67 / SHGC-0.79 (clear) Window		0.07	\$19.20	
U-0.40 / SHGC-0.65 (clear) Window	U-0.67 / SHGC-0.79 (clear) Window		0.00	\$13.10	
U-0.40 / SHGC-0.40 (tint) Window	U-0.67 / SHGC-0.79 (clear) Window		0.34	\$22.77	
U-0.35 / SHGC-0.55 (clear) Window	U-0.67 / SHGC-0.79 (clear) Window		0.00	\$13.92	Costs of measures decline significantly when compared with the cost and installation of standard non-efficient windows. (\$16.41 per sq ft)
U-0.35 / SHGC-0.32 (tint) Window	U-0.67 / SHGC-0.79 (clear) Window		0.30	\$22.81	
U-0.25 / SHGC-0.35 (clear) Window	U-0.67 / SHGC-0.79 (clear) Window		0.00	\$15.55	
U-0.25 / SHGC-0.22 (tint) Window	U-0.67 / SHGC-0.79 (clear) Window		0.10	\$20.58	
Ceiling R-0 to R-38 Insulation-Batts	R-0 Ceiling Insulation		0.00	\$0.86	
Ceiling Vintage to R-49 Insulation-Batts	Per prototype description		0.02	\$0.86	
HVAC					
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20/16/4% of AHU flow	34.44		\$107.91	
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply/return/OA leakage 12/9.6/2.4% of AHU flow	82.24		\$107.91	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 16 cents/kWh and Gas: .9 cents/kBtu)

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MULTIFAMILY MODERATE / MINOR REHAB

MULTIFAMILY MINOR REHAB					
<i>New Technology</i>	<i>Base Technology</i>	<i>Simple Payback (years)</i>	<i>Replace on Fail Payback (years)</i>	<i>Cost of Measure</i>	<i>Comments</i>
Shell					
U-0.60 / SHGC-0.65 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.07	\$19.20	
U-0.40 / SHGC-0.65 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$13.10	
U-0.40 / SHGC-0.40 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.34	\$22.77	
U-0.35 / SHGC-0.55 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$13.92	Costs of measures decline significantly when compared with the cost and installation of standard non-efficient windows. (\$16.41 per sq ft)
U-0.35 / SHGC-0.32 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.31	\$22.81	
U-0.25 / SHGC-0.35 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$15.55	
U-0.25 / SHGC-0.22 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.11	\$20.58	
Low-Income Weatherization w/ Evaporative Cooler	Direct Evap. Cooling with Infiltration of 0.47 Air Changes per Hour		0.00	\$0.00	Direct Evap. Cooling with Infiltration of 0.35 Air Changes per Hour
Low-Income Weatherization w/out Evaporative Cooler	Infiltration of 0.45 Air Changes per Hour		0.00	\$0.00	Infiltration of 0.35 Air Changes per Hour
HVAC					
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20/16/4% of AHU flow	19.03		\$107.91	
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply/return/OA leakage 12/9.6/2.4% of AHU flow	43.83		\$107.91	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 16 cents/kWh and Gas: 9 cents/kBtu)

3.3. Mountainous Climate Zone (typical of CA, AZ, NV)

COMMUNITIES IN THIS CLIMATE ZONE

- ARIZONA
- Alpine
- Bisbee
- Cochise
- Duncan
- Flagstaff
- Grand Canyon
- Holbrook
- Nogales
- Prescott
- Sanders
- Williams
- Winslow
- Yucca
- NEVADA
- Baker
- Battle Mountain
- Boulder City
- Carson City
- Ely
- Eureka
- Henderson
- Las Vegas
- North Las Vegas
- Reno
- Sparks
- Winnemucca
- CALIFORNIA
- Bishop
- Frazier Park
- McArthur
- Ojai
- San Bernardino
- South Lake Tahoe
- Tehachapi
- Truckee

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SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB

SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB					
<i>New Technology</i>	<i>Base Technology</i>	<i>Simple Payback (years)</i>	<i>Replace on Fail Payback (years)</i>	<i>Cost of Measure</i>	<i>Comments</i>
Shell					
U-0.40 / SHGC-0.65 (clear) Window	U-0.67 / SHGC-0.79 (clear) Window		0.00	\$13.10	Costs of measures decline significantly when compared with the cost and installation of standard non-efficient windows. (\$16.41 per sq ft)
U-0.35 / SHGC-0.55 (clear) Window	U-0.67 / SHGC-0.79 (clear) Window		0.00	\$13.92	
U-0.25 / SHGC-0.35 (clear) Window	U-0.67 / SHGC-0.79 (clear) Window		0.00	\$15.55	
U-0.25 / SHGC-0.22 (tint) Window	U-0.67 / SHGC-0.79 (clear) Window		0.25	\$20.58	
Ceiling Vintage to R-49 Insulation-Batts	Per prototype description		0.02	\$0.86	
HVAC					
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20/16/4% of AHU flow		0.00	\$107.91	
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply/return/OA leakage 12/9.6/2.4% of AHU flow		0.00	\$107.91	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 13 cents/kWh and Gas: 1.2 cents/kBtu)

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SINGLE FAMILY MODERATE / MINOR REHAB

SINGLE FAMILY MINOR REHAB					
<i>New Technology</i>	<i>Base Technology</i>	<i>Simple Payback (years)</i>	<i>Replace on Fail Payback (years)</i>	<i>Cost of Measure</i>	<i>Comments</i>
Shell					
U-0.40 / SHGC-0.65 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$13.10	Costs of measures decline significantly when compared with the cost and installation of standard non-efficient windows. (\$16.41 per sq ft)
U-0.35 / SHGC-0.55 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$13.92	
U-0.25 / SHGC-0.35 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$15.55	
Low-Income Weatherization w/ Evaporative Cooler	Direct Evap. Cooling with Infiltration of 0.47 Air Changes per Hour		0.00	\$0.00	Direct Evap Cooling with Infiltration of 0.35 Air Changes per Hour
Low-Income Weatherization w/out Evaporative Cooler	Infiltration of 0.45 Air Changes per Hour		0.00	\$0.00	Infiltration of 0.35 Air Changes per Hour
HVAC					
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20/16/4% of AHU flow		0.00	\$107.91	
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply/return/OA leakage 12/9.6/2.4% of AHU flow		0.00	\$107.91	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 13 cents/kWh and Gas: 1.2 cents/kBtu)

MULTIFAMILY NEW CONSTRUCTION / REHAB

MULTIFAMILY NEW CONSTRUCTION / MAJOR REHAB

New Technology

Base Technology

Simple Payback (years)

Replace on Fail Payback (years)

Cost of Measure

Comments

Shell

U-0.50 / SHGC-0.65 (clear) Window U-0.67 / SHGC-0.79 (clear) Window

0.25 \$19.20

U-0.40 / SHGC-0.65 (clear) Window U-0.67 / SHGC-0.79 (clear) Window

0.00 \$13.10

U-0.40 / SHGC-0.40 (tint) Window U-0.67 / SHGC-0.79 (clear) Window

0.50 \$22.77

U-0.35 / SHGC-0.55 (clear) Window U-0.67 / SHGC-0.79 (clear) Window

0.00 \$13.92

U-0.35 / SHGC-0.32 (tint) Window U-0.67 / SHGC-0.79 (clear) Window

0.32 \$22.81

U-0.25 / SHGC-0.35 (clear) Window U-0.67 / SHGC-0.79 (clear) Window

0.00 \$15.55

U-0.25 / SHGC-0.22 (tint) Window U-0.67 / SHGC-0.79 (clear) Window

0.07 \$20.58

Ceiling Vitrage to R-49 Insulation-Batts Per prototype-description

0.01 \$0.86

Costs of measures decline significantly when compared with the cost and installation of standard non-efficient windows. (\$16.41 per sq ft)

HVAC

Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%) Supply/return/OA leakage 20/16/4% of AHU flow

10.06

\$107.91

Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%) Supply/return/OA leakage 12/9.6/2.4% of AHU flow

23.70

\$107.91

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 13 cents/kWh and Gas: 1.2 cents/kBtu)

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MULTIFAMILY MODERATE / MINOR REHAB

MULTIFAMILY MINOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
Shell					
U-0.40 / SHGC-0.65 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$13.10	Costs of measures decline significantly when compared with the cost and installation of standard non-efficient windows. (\$16.41 per sq ft)
U-0.40 / SHGC-0.40 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.66	\$22.77	
U-0.35 / SHGC-0.55 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$13.92	
U-0.35 / SHGC-0.32 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.40	\$22.81	
U-0.25 / SHGC-0.35 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$15.55	
U-0.25 / SHGC-0.22 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.09	\$20.58	
Low-Income Weatherization w/ Evaporative Cooler	Direct Evap Cooling with Infiltration of 0.47 Air Changes per Hour		0.00	\$0.00	Direct Evap Cooling with Infiltration of 0.35 Air Changes per Hour
Low-Income Weatherization w/out Evaporative Cooler	Infiltration of 0.45 Air Changes per Hour		0.00	\$0.00	Infiltration of 0.35 Air Changes per Hour
HVAC					
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20/16/4% of AHU flow	8.96		\$107.91	
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply/return/OA leakage 12/9.6/2.4% of AHU flow	21.09		\$107.91	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 13 cents/kWh and Gas: 1.2 cents/kBtu)

3.4. Desert Climate Zone (typical of CA, AZ, NV)

COMMUNITIES IN THIS CLIMATE ZONE

- ARIZONA
 - Aguila
 - Ajo
 - Casa Granda
 - Gila Bend
 - Glendale
 - Mesa
 - Phoenix
 - Tucson
 - Yuma
- CALIFORNIA
 - Apple Valley
 - Barstow
 - Blythe
 - Boron
 - Calexico
 - California City
 - Cathedral City
 - Desert Hot Springs
 - Edwards
 - El Centro
 - Hesperia
 - Indio
 - Jacumba
- Julian
 - Lancaster
 - Mojave
 - Palm Desert
 - Palm Springs
 - Palmdale
 - Phelan
 - Ridgecrest
 - Tecate
 - Trona
 - Twentynine Palms
 - Victorville
 - Yucca Valley

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SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB

SINGLE FAMILY NEW CONSTRUCTION / MAJOR REHAB		Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
New Technology	Base Technology				
Shell					
U-0.35 / SHGC-0.32 (tint) Window	U-0.57 / SHGC-0.40 (clear) Window		0.23	\$22.81	Costs of measures decline significantly when compared with the cost and installation of standard non-efficient windows. (\$16.41 per sq ft)
U-0.25 / SHGC-0.35 (clear) Window	U-0.57 / SHGC-0.40 (clear) Window		0.31	\$22.81	
			0.00	\$15.55	
			0.00	\$15.55	
U-0.25 / SHGC-0.22 (tint) Window	U-0.57 / SHGC-0.40 (clear) Window		0.09	\$20.58	
			0.09	\$20.58	
Ceiling Vitrage to R-49 Insulation-Batts	Res: prototype description		0.02	\$0.96	
			0.03	\$0.86	
HVAC					
Direct Evaporative Cooler	13.0 SEER Split-System Air Conditioner	24.72		\$1,627.56	
Direct-Indirect Evaporative Cooler	13.0 SEER Split-System Air Conditioner	28.06		\$2,367.13	
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20/16/4% of AHU flow		0.00	\$107.91	
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply/return/OA leakage 12/9.6/2.4% of AHU flow	7.73		\$107.91	
		10.20		\$107.91	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 9.5 cents/kWh and Gas: 1.5 cents/kBtu)

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SINGLE FAMILY MODERATE / MINOR REHAB

SINGLE FAMILY MINOR REHAB		Simple Payback (years)	Replace or Fail Payback (years)	Cost of Measure	Comments
New Technology	Base Technology				
Shell					
U-0.35 / SHGC-0.32 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.19	\$22.81	
U-0.25 / SHGC-0.35 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.20	\$22.81	
U-0.25 / SHGC-0.22 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$15.55	
Single Pane Clear Glass With Spectrally Selective Film	U-1.23 / SHGC-0.87 (clear) Window		0.06	\$20.58	Costs of measures decline significantly when compared with the cost and installation of standard non-efficient windows. (\$16.41 per sq ft)
Single Pane Clear Glass With Reflective Film	U-1.23 / SHGC-0.87 (clear) Window		0.05	\$20.58	
Default Window With Sunscreen	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$2.70	
Low-Income Weatherization w/ Evaporative Cooler	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$2.70	
Low-Income Weatherization w/out Evaporative Cooler	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$2.13	
Direct Evaporative Cooler	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$1.27	
Direct Indirect Evaporative Cooler	Direct Evap Cooling with Infiltration of 0.47 Air Changes per Hour		0.00	\$0.00	Direct Evap Cooling with Infiltration of 0.35 Air Changes per Hour
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Infiltration of 0.45 Air Changes per Hour		0.00	\$0.00	Infiltration of 0.35 Air Changes per Hour
High Refrigerant Charge Adjustment (>= ±20% rated charge)	Cooling Performance degraded based on improper refrigerant charge		0.00	\$46.33	Savings varies depending on number of AC days in climate region.
HVAC					
Direct Evaporative Cooler	8.5 SEER Split-System Air Conditioner	11.29		\$1,627.56	
Direct Indirect Evaporative Cooler	8.5 SEER Split-System Air Conditioner	12.47		\$2,367.13	
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply return OA leakage 129.6/2.4% of AHU flow		0.00	\$107.91	
High Refrigerant Charge Adjustment (>= ±20% rated charge)	Cooling Performance degraded based on improper refrigerant charge		0.00	\$107.91	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 9.5 cents/kWh and Gas: 1.5 cents/kBtu)

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MULTIFAMILY NEW CONSTRUCTION / MAJOR REHAB

MULTIFAMILY NEW CONSTRUCTION / MAJOR REHAB					
New Technology	Base Technology	Simple Payback (years)	Replace on Fail Payback (years)	Cost of Measure	Comments
Shell					
U-0.35 / SHGC-0.32 (tint) Window	U-0.57 / SHGC-0.40 (clear) Window		0.17	\$22.81	Costs of measures decline significantly when compared with the cost and installation of standard non-efficient windows. (\$16.41 per sq ft)
U-0.25 / SHGC-0.35 (clear) Window	U-0.57 / SHGC-0.40 (clear) Window		0.31	\$22.81	
			0.00	\$15.55	
			0.00	\$15.55	
U-0.25 / SHGC-0.22 (tint) Window	U-0.57 / SHGC-0.40 (clear) Window		0.06	\$20.58	
			0.10	\$20.58	
			0.01	\$0.96	
			0.02	\$0.96	
CEILING VENTAGE TO R-49 INSULATION-BATTIS Per prototype description					
HVAC					
Direct Evaporative Cooler	13.0 SEER Split-System Air Conditioner	94.85		\$1,627.56	
		28.17		\$1,627.56	
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20/16/4% of AHU flow	14.36		\$107.91	
		20.27		\$107.91	
Duct Sealing (Total Leakage Reduced from 24% of AHU flow to 12%)	Supply/return/OA leakage 12/9/6/2-4% of AHU flow	33.58		\$107.91	
		46.77		\$107.91	

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 9.5 cents/kWh and Gas: 1.5 cents/kBtu)

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MULTIFAMILY MODERATE / MINOR REHAB

MULTIFAMILY MINOR REHAB

<i>New Technology</i>	<i>Base Technology</i>	<i>Simple Payback (years)</i>	<i>Replace or Fail Payback (years)</i>	<i>Cost of Measure</i>	<i>Comments</i>
Shell					
U-0.35 / SHGC-0.32 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.18	\$22.81	
U-0.25 / SHGC-0.35 (clear) Window	U-1.23 / SHGC-0.87 (clear) Window		0.25	\$22.81	
U-0.25 / SHGC-0.22 (tint) Window	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$15.55	
Single Pane Clear Glass With Reflective Film	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$15.55	
Single Pane Clear Glass With Standard Film	U-1.23 / SHGC-0.87 (clear) Window		0.06	\$20.58	Costs of measures decline significantly when compared with the cost and installation of standard non-efficient windows. (\$16.41 per sq ft)
Single Pane Clear Glass With Spectrally Selective Film	U-1.23 / SHGC-0.87 (clear) Window		0.08	\$20.58	
Default Window With Sunscreen	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$2.13	
Low-Income Weatherization w/ Evaporative Cooler	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$1.54	
Low-Income Weatherization w/out Evaporative Cooler	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$2.70	
Direct Evaporative Cooler	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$1.27	
Low-Income Weatherization w/out Evaporative Cooler	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$0.00	Direct Evap. Cooling with Infiltration of 0.35 Air Changes per Hour
Low-Income Weatherization w/out Evaporative Cooler	U-1.23 / SHGC-0.87 (clear) Window		0.00	\$0.00	Infiltration of 0.35 Air Changes per Hour
HVAC					
Direct Evaporative Cooler	8.5 SEER Split-System Air Conditioner	12.95		\$1,627.56	
Direct-Indirect Evaporative Cooler	8.5 SEER Split-System Air Conditioner	15.46		\$1,627.56	
Duct Sealing (Total Leakage Reduced from 40% of AHU flow to 12%)	Supply/return/OA leakage 20/16/4% of AHU flow	53.26		\$2,367.13	
High Refrigerant Charge Adjustment (>= ±20% rated charge)	Cooling Performance degraded based on improper refrigerant charge	19.02		\$2,367.13	Savings varies depending on number of AC days in climate region.

* The savings listed in tables are based on average costs of energy within the region. (Electricity: 9.5 cents/kWh and Gas: 1.5 cents/kBtu)

4. References

- **California Solar Initiative**, <http://www.gosolarcalifornia.ca.gov/csi/index.html>
You can use this site for details about the California Solar Initiative, a 2+ billion program for existing residential units and a possible resource for HUD-funded rehabilitations.
- **Database for Energy Efficient Resources (DEER)**, <http://eega.cpuc.ca.gov/deer/>
You can use this site to find information such as energy savings, measure costs and measure life on energy efficiency measures in one comprehensive database.
- **Department of Housing and Urban Development**, www.hud.gov
HUD offers a number of resources on its web site on affordable housing programs as well as energy efficiency and sustainable design. The site further details HUD's policy about incorporating efficiency into the programs it sponsors: <http://www.hud.gov/energystar/home.cfm>.
- **Database of State Incentives for Renewables and Efficiency (DSIRE)**, <http://www.dsireusa.org/>
DSIRE is a comprehensive source of information on state, local, utility, and federal incentives that promote renewable energy and energy efficiency by the state from which you are operating.
- **Energy Star**, <http://www.energystar.gov>
The Energy Star website offers a great deal of information on Energy Star programs, including products to buy, local partners and certified contractors advancing ENERGY STAR in your area, and tools for implementing ENERGY STAR systems and guidelines in a project. The types of tools on this site include:
 - **Manuals**
 - *A Guide to Energy Efficient Heating and Cooling*
 - *Build Energy Star Qualified Homes*
 - **Brochures**
 - *Home Sealing Brochure*
 - *Duct Sealing Brochure*
 - *New Homes Brochure*
- **Enterprise Foundation's Green Communities Initiative**, <http://www.greencommunitiesonline.org/>
Green Communities provides funds and expertise to developers building and rehabilitating affordable homes in an energy efficient and environmentally sustainable manner. Green Communities also assists state and local governments to ensure their housing and economic development policies are smart and sustainable.
- **HUD Rehab Advisor**, <http://rehabadvisor.pathnet.org/>
HUD Rehab Advisor uses information about a project to estimate energy and cost savings efficiency measures will achieve.
- **Home Energy Savings Cost Calculator**, <http://hes.lbl.gov/>
Use this tool to get a realistic idea of the actual costs and savings of implementing efficiency measures in an existing building.
- **US Green Building Council – Leadership in Energy and Environmental Design (LEED)**, <http://www.usgbc.org/>
THE USGBC website includes information resources about training, partnering, and facilitating efforts to create buildings that are environmentally responsible, profitable, and healthy places to live and work. It includes a description of and information about the LEED program and opportunities for visitors to promote green building in their community.
- **Residential Energy Services Network (RESNET)**, <http://www.resnet.us>
The Residential Services Network (RESNET) created training and certifying standards for the HERS program which prescribe minimum competencies for HERS certified trainers and raters. These

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standards apply to the 3rd party raters of ENERGY STAR New Homes as well. The RESNET website includes information about HERS trainings and receiving certification to become a rater as well as descriptions of RESNET and the HERS index and thresholds.

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**Attachment 1: Descriptions of Recommended
Measures**

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LIGHTING

SCREW-IN COMPACT FLUORESCENT LAMPS (CFLs)

REHABILITATION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between an incandescent lamp and an equivalent CFL

Additional Measure Information: Installing screw-in CFLs to replace incandescent lamps is an inexpensive way to achieve significant energy efficiency gains and reduce monthly utility bills year round. As with an incandescent lamp, screw in CFLs fit into conventional screw fixtures. CFLs typically last 8,000 to 10,000 hours while conventional incandescent lamps last only 1,000 to 2,000 hours. CFLs also typically use a quarter of the electricity used by incandescent lamps in order to create the same amount of light.

If a rehab plan for a property calls for the replacement of actual lighting fixtures, then screw-in CFLs are not going to be a viable energy efficiency choice because the 2005 California Building Energy Efficiency Standards (Title 24) requires that any new fixtures installed in existing properties meet the same requirements as newly constructed properties. Under Title 24, screw-in CFLs are not deemed to be high efficacy lighting because they have the same socket as incandescent lamps and so can be replaced at a later date by incandescent lamps. As will be explained below, high efficacy lighting is required for most all fixtures in residential buildings.

NEW CONSTRUCTION PROPERTIES

Measure Priority: Low—Hard-wired CFLs are a more appropriate application

Measure Cost Assumption: Incremental cost

Measure Savings Assumption: The difference in energy use between an incandescent lamp and an equivalent CFL

Additional Measure Information: Under Title 24, high efficacy lighting is defined as lighting that provides more than 40-60 lumens (a measure of light output) per watt of electricity and which does not use a conventional screw-based socket. Because Screw-in CFLs were designed specifically to replace incandescent lamps without replacing the complete lighting fixture, they have a conventional screw-based socket and consequently cannot be installed anywhere that requires high efficacy lighting. The only major exception under Title 24 is for lighting that is controlled by an occupancy sensor but it makes little sense to prefer screw-in CFLs over hard-wired CFLs for most new construction applications given the latter's greater longevity and permanence.

HARD-WIRED CFLS

REHABILITATION PROPERTIES

Measure Priority: Low—Screw-in CFLs are more cost-effective for most situations

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between an incandescent lamp and an equivalent CFL

Additional Measure Information: Hard-wired CFLs do not fit into conventional screw-in sockets and so require the replacement of the lighting fixtures as well when replacing incandescent lamps, making the technology relatively expensive for rehab projects. Since the energy savings from screw-in and hard-wired CFLs are equivalent, it is more cost-effective to install screw-in CFLs for rehab projects that do not involve the installation of new lighting fixtures. But rehab projects that do involve the installation of new lighting fixture should, and have to in most cases, install hard-wired CFLs because the smaller incremental cost makes the measure significantly more cost-effective. When lighting fixtures are replaced, Title 24 requires that the lighting in most all residential space be high efficacy and not have a conventional screw-in socket. For interior lighting, this means the installation of hard-wired fluorescent lamps while exterior lighting can be provided by hard-wired fluorescent, metal halide, or high- and low-pressure sodium lamps.

NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Equipment cost

Measure Savings Assumption: The difference in energy use between an incandescent lamp and an equivalent CFL

Additional Measure Information: Under the new Title 24 requirements, high efficacy lighting is required in most all lighting fixtures at residential homes. For interior lighting, this means the installation of hard-wired fluorescent lamps while exterior lighting can be provided by hard-wired fluorescent, metal halide, or high- and low-pressure sodium lamps. There is an exception for some rooms such as bathrooms, living rooms, and garages that allows for low efficacy lamps to be installed so long as they are controlled by a "manual-on" occupancy sensor. Exterior lighting has a similar exception that allows for low efficacy lighting to be installed so long as a motion sensor and photocell are installed to control the fixtures. In order to achieve maximum energy efficiency, it is recommended that hard-wired CFLs be installed along with occupancy sensors and photocells to make sure that a home's lighting uses as little electricity as possible when on and is off as much as possible.

HIGH EFFICIENCY LED EXIT SIGN

MULTIFAMILY REHABILITATION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between an incandescent exit sign and an LED exit sign.

Additional Measure Information: Since exit signs are typically on all the time, switching from incandescent signs to higher efficiency light emitting diode (LED) signs can save significant amounts of electricity and money for multi-family properties. LED exit signs also typically last for five or ten years while incandescent bulbs burn out several times a year.

MULTIFAMILY NEW CONSTRUCTION PROPERTIES

Additional Measure Information: Title 24 requires that exit signs have a wattage below 5 watts per illuminated face. In effect, this rule requires LED exit signs or some other equally efficient technology. There are no cost-effective means of improving upon this required technology.

DELAMPING T12 FLUORESCENT FIXTURES

MULTIFAMILY REHABILITATION PROPERTIES

Measure Priority: High—Not widely applicable

Measure Cost Assumption: De-installation cost (largely labor)

Measure Savings Assumption: Energy savings is equal to avoided energy use of removed lamps or fixtures

Additional Measure Information: Delamping is typically done only in larger common area spaces of multi-family properties when lighting is being converted from T12 to T8 lamps. The delamping is caused either by new fixtures which direct more light downwards or because T8 lamps produce more light than T12 lamps. Either way, a space that uses a great deal of linear fluorescent lighting can go from being well lit to being over-lit as a result of the retrofit unless some fixtures or lamps are removed as part of the project. This measure should not be undertaken unless it is judged that a space has or will have too much light. Whole fixtures can be removed or individual lamp holders within fixtures can be removed, depending upon which method will provide the most uniform lighting for the space.

MULTIFAMILY NEW CONSTRUCTION PROPERTIES

Measure Priority: Not Applicable

Title 24 requires T8 lamps or better in all new construction properties. By taking this into account from the beginning, over lighting will not occur and delamping will be unnecessary.

EXTERIOR HIGH EFFICACY LAMPS (METAL HALIDE, HIGH & LOW PRESSURE SODIUM)

MULTIFAMILY REHABILITATION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between the assumed existing technology and high efficiency option

Additional Measure Information: Exterior lighting of parking areas and walkways can be a significant electricity consumer for multi-family properties due to the high levels of light output required and long hours of use. Properties that are currently using incandescent or mercury vapor lamps to light exterior space can very cost-effectively reduce electricity use by switching from these lower efficacy forms of lighting to metal halide and high and low pressure sodium lamps. Low pressure sodium lamps are the most energy efficient form of lighting but provide a poor quality, yellow light that is only appropriate for certain situations such as some parking areas. High pressure sodium and metal halide lights provide higher quality, whiter light while still

presenting significant energy efficiency gains over incandescent and mercury vapor lamps. Alternatively, in cases where lower levels of light are needed fluorescent lamps can be used.

MULTIFAMILY NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Equipment cost

Measure Savings Assumption: The difference in energy use between the assumed low and high efficacy options

Additional Measure Information: Title 24 requires that all permanent exterior lighting be either high efficacy or that it be controlled by a motion sensor. High-rise (more than 3 floors) multi-family properties must also control exterior lights with photocells or astronomical time switches to ensure that exterior lighting is not on during daylight hours. To achieve maximum energy efficiency, multi-family properties should install high efficacy lighting along with photocells and, where appropriate, motion sensors.

EXTERIOR HIGH EFFICACY LAMPS (METAL HALIDE, HIGH & LOW PRESSURE SODIUM)

MULTIFAMILY REHABILITATION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between the assumed existing technology and high efficiency option

Additional Measure Information: Exterior lighting of parking areas and walkways can be a significant electricity consumer for multi-family properties due to the high levels of light output required and long hours of use. Properties that are currently using incandescent or mercury vapor lamps to light exterior space can very cost-effectively reduce electricity use by switching from these lower efficacy forms of lighting to metal halide and high and low pressure sodium lamps. Low pressure sodium lamps are the most energy efficient form of lighting but provide a poor quality, yellow light that is only appropriate for certain situations such as some parking areas. High pressure sodium and metal halide lights provide higher quality, whiter light while still presenting significant energy efficiency gains over incandescent and mercury vapor lamps. Alternatively, in cases where lower levels of light are needed fluorescent lamps can be used.

MULTIFAMILY NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Equipment cost

Measure Savings Assumption: The difference in energy use between the assumed low and high efficacy options

Additional Measure Information: Title 24 requires that all permanent exterior lighting be either high efficacy or that it be controlled by a motion sensor. High-rise (more than 3 floors) multi-family properties must also control exterior lights with photocells or astronomical time switches to ensure that exterior lighting is not on during daylight hours. To achieve maximum energy efficiency, multi-family properties should install high efficacy lighting along with photocells and, where appropriate, motion sensors.

T8 LAMPS WITH ELECTRONIC BALLASTS

REHABILITATION PROPERTIES

Measure Priority: Large multi-family—High Other—Moderate

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between T12 lamps with magnetic ballast and T8 lamps with electronic ballast

Additional Measure Information: T8 lamps with electronic ballast uses approximately a quarter less electricity than T12 lamps powered by a magnetic ballast while providing more and higher quality light. For larger multi-family properties that use linear fluorescent lighting in common areas, the switch from T12 to T8 lighting can reduce electricity use significantly because of the long hours of operation for these common area lights.

Linear fluorescent fixtures in tenant units and single family homes tend to operate fewer hours, meaning that retrofitting these fixtures to use T8 lamps does not save as much electricity in a year and so has a longer payback period.

Of note, when switching from T12 to T8 lamps, the ballast(s) that powers the fixture must also be changed. This second step is often forgotten because T12 and T8 lamps fit into the same fixtures and the ballast is typically hidden within the fixture. T8 lamps powered by a T12 ballast will receive too much electricity and consequently burn out rapidly.

NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Incremental cost

Measure Savings Assumption: The difference in energy use between T12 lamps with electronic ballast and T8 lamps with electronic ballast

Additional Measure Information: T8 lamps and electronic ballasts are considered standard lighting practice for most contractors working on new construction projects but T12 lamps are technically permissible under Title 24 so long as they are powered by electronic ballasts. If the original plans for a new construction project do call for T12 lamps to be installed, installing T8 lamps with the appropriate ballasts is a very inexpensive means of improving the energy efficiency of the building.

OCCUPANCY SENSORS

REHABILITATION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between 200 watts of residential lighting with and without an occupancy sensor controlling the lighting

Additional Measure Information: In the state of California there are now two types of occupancy sensors. Manual-on occupancy sensors typically come attached to a typical light

switch. The occupancy sensor acts as a back-up to the light switch, automatically turning the lights off in a room if an occupant forgets to turn the lights off upon leaving the room. This type of sensor is best suited for indoor use in rooms such as bathrooms and bedrooms. Automatic-on occupancy sensors, often called motion sensors, take the place of a light switch but turning lights on any time a room is occupied and turning them off when the room is left unoccupied. This type of control is best suited for outdoor use or in the common areas of multi-family housing such as hallways. Both types are effective at reducing the number of hours of use for lighting, which in turn reduces a properties electricity bill.

NEW CONSTRUCTION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between 200 watts of residential lighting with and without an occupancy sensor controlling the lighting

Additional Measure Information: Under Title 24, many areas of new residential homes must have either high efficacy lighting or lighting that is controlled by occupancy sensors (manual-on sensors for interior applications). For maximum energy efficiency, high efficacy lighting should be combined with occupancy sensors.

PHOTOCELL

REHABILITATION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between 280 watts of exterior lighting with and without a photocell controlling the lighting

Additional Measure Information: Photocell controls turn lights on and off depending upon whether there is sufficient daylight or not. The controls are typically used only with exterior lighting but they can be used for some interior applications like common area hallways of multi-family housing that receive lots of daylight. They are typically not cost-effective if they are controlling only one or two lights but are a good investment for controlling larger numbers of lamps if they can be controlled with one photocell.

NEW CONSTRUCTION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between 280 watts of exterior lighting with and without a photocell controlling the lighting

Additional Measure Information: Under Title 24, exterior lighting must either use high efficacy lamps or control lower-efficacy lamps with a motion sensor and photocell. High-rise multi-family properties must control exterior lighting with either a photocell or an astronomical timeclock. For maximum energy efficiency, exterior lighting should be high efficacy and combined with motion sensors and photocells.

TIMECLOCK

REHABILITATION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between 280 watts of exterior lighting with and without a timeclock controlling the lighting

Additional Measure Information: Timeclock controls turn lights on and off according to a timer that can be programmable to coincide with dusk and dawn. The controls are intended to be used with exterior lighting. The purpose of the measure is to ensure that exterior lights are on at night, when they need to be, but off during the day when they serve no purpose.

NEW CONSTRUCTION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between 280 watts of exterior lighting with and without a timeclock controlling the lighting

Additional Measure Information: Under Title 24, exterior lighting must either use high efficacy lamps or control lower efficacy lamps with a motion sensor with integral photocell. If a property chose to comply with Title 24 by installing high efficacy lamps, further efficiency gains could be achieved by installing a timeclock. If a property chose to comply by installing low efficacy lamps controlled by a motion sensor and photocell, a timeclock would not make a good addition because photocells and timeclocks perform very similar tasks. High-rise multi-family properties (four stories and above) must control exterior lighting with a photocell or astronomical timeclock.

APPLIANCES

VENDING MACHINE OCCUPANCY SENSORS

MULTIFAMILY REHABILITATION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between a standard vending machine with and without an occupancy sensors control

Additional Measure Information: Vending machine occupancy sensors shut off the machines lighting and raise the permissible temperature for refrigerated vending machines when the space surrounding the machine is left unoccupied. ENERGY STAR vending machines are also available which have additional energy efficiency measures.

MULTIFAMILY NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between a standard vending machine with and without an occupancy sensors control

Additional Measure Information: Vending machine occupancy sensors shut off the machines lighting and raise the permissible temperature for refrigerated vending machines when the space surrounding the machine is left unoccupied. ENERGY STAR vending machines are also available which have additional energy efficiency measures.

ENERGY STAR CLOTHES WASHER

REHABILITATION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Incremental cost. Replaces existing clothes washer upon failure or need of replacement.

Measure Savings Assumption: The difference in energy use between standard and high efficiency clothes washer.

Common area clothes washers in multi-family properties are assumed to be used three times as much and have three times the energy savings of single household clothes washers while not being any more expensive. It should be noted that the annual savings shown for this measure does not take into account monetary value of the measure's water savings which would further reduce the payback period.

Additional Measure Information: ENERGY STAR clothes washers use 18-25 gallons per load instead of the 40 gallons of a standard clothes washer. The decreased water use also means decreased hot water heating. ENERGY STAR clothes washers further improve efficiency by extracting more water during the spin cycle, reducing the amount of time the clothes need to spend in the dryer. ENERGY STAR clothes washers can be either top-loading or front-loading. From an energy efficiency standpoint the front-loading washers are superior because they use less water than the top-loading versions. Front-loading washers are also typically easier for the disabled and elderly to use.

NEW CONSTRUCTION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Incremental cost

Measure Savings Assumption: The difference in energy use between standard and high efficiency clothes washer.

Common area clothes washers in multi-family properties are assumed to be used three times as much and have three times the energy savings of single household clothes washers while not being any more expensive. It should be noted that the annual savings shown for this measure does not take into account monetary value of the measure's water savings which would further reduce the payback period.

Additional Measure Information: ENERGY STAR clothes washers are highly recommended for new construction properties. Despite their higher up-front cost, high efficiency clothes

washers will over their lifetime save a property money by reducing the amount of water used, especially hot water, and decreasing the amount of time clothes need to be put in the dryer.

ENERGY STAR DISHWASHER

REHABILITATION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Incremental cost. Replaces existing dishwasher upon failure or need of replacement.

Measure Savings Assumption: The difference in energy use between standard and high efficiency dishwasher.

It should be noted that the annual savings shown for this measure does not take into account monetary value of the measure's water savings which would further reduce the payback period.

Additional Measure Information: ENERGY STAR dishwashers use less than 75% of the energy that federal minimum standards require for dishwashers while using much less water than conventional models.

NEW CONSTRUCTION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Incremental cost

Measure Savings Assumption: The difference in energy use between standard and high efficiency dishwasher.

It should be noted that the annual savings shown for this measure does not take into account monetary value of the measure's water savings which would further reduce the payback period.

Additional Measure Information: ENERGY STAR dishwashers are highly recommended for new construction properties. Despite their higher up-front cost, high efficiency dishwashers will save a property money over their lifetime by reducing the water, and specifically hot water, used per load.

ENERGY STAR REFRIGERATOR

REHABILITATION PROPERTIES

Measure Priority: Moderate to low depending upon the age of the current refrigerator(s). Energy savings grows significantly with the age of the refrigerator being replaced.

Measure Cost Assumption: Incremental cost. Replaces existing refrigerator upon failure or need of replacement.

Measure Savings Assumption: The difference in energy use between a standard and high efficiency refrigerator.

Additional Measure Information: ENERGY STAR refrigerators save energy through using more efficient compressors and improved insulation. ENERGY STAR refrigerators use at least 10% less energy that federal minimum standards require for refrigerators.

NEW CONSTRUCTION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Incremental cost

Measure Savings Assumption: The difference in energy use between a standard and high efficiency refrigerator.

Additional Measure Information: ENERGY STAR refrigerators are recommended for new construction properties because their incremental savings over standard efficiency refrigerators is cost-effective.

DOMESTIC HOT WATER

LOW FLOW SHOWERHEAD

REHABILITATION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including cost)

Measure Savings Assumption: The difference in energy use between a standard efficiency showerhead and a low-flow showerhead.

It should be noted that the annual savings shown for this measure does not take into account monetary value of the measure's water savings which would further reduce the payback period.

Additional Measure Information: Low-flow showerheads reduce the flow of water out of a showerhead to 2.5 gpm or less. This reduction has little effect on the quality of shower provided while curbing the amount of hot water used which translates into easy energy savings.

NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Assumes an incremental cost of \$7 per showerhead

Measure Savings Assumption: The difference in energy use between a standard efficiency showerhead and a low-flow showerhead.

It should be noted that the annual savings shown for this measure does not take into account monetary value of the measure's water savings which would further reduce the payback period.

Additional Measure Information: Title 24 requires 2.5 gpm low-flow showerheads for new construction. Additional savings is possible by using higher efficiency low-flow showerheads that restrict showerhead flow to 1.75 gpm.

FAUCET AERATOR

REHABILITATION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including cost)

Measure Savings Assumption: The difference in energy use between an un-aerated faucet and a faucet with a qualifying faucet aerator.

It should be noted that the annual savings shown for this measure does not take into account monetary value of the measure's water savings which would further reduce the payback period.

Additional Measure Information: Un-aerated faucets can use between 3-5 gpm while a faucet aerator reduces that flow to 2.2 gpm or less. The reduction in water flow is not noticeable for most tasks and saves water.

NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Assumes an incremental cost of \$3 per faucet aerator.

Measure Savings Assumption: The difference in energy use between a 2.2 gpm faucet aerator and a 1.0 or 1.5 gpm faucet aerator. This savings is assumed to be half that of installing a faucet aerator on an un-aerated faucet.

It should be noted that the annual savings shown for this measure does not take into account monetary value of the measure's water savings which would further reduce the payback period.

Additional Measure Information: Title 24 requires that 2.2 gpm faucet aerators be installed on all lavatory and kitchen faucets. Further energy efficiency can be gained by installed 1.0 gpm faucet aerators on lavatory faucets and 1.5 gpm faucet aerators on kitchen faucets.

HOT WATER BLANKET

REHABILITATION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including cost)

Measure Savings Assumption: The difference in energy use between unwrapped and wrapped hot water storage tank.

Additional Measure Information: Uninsulated or under-insulated hot water storage tanks lose significant heat to the surrounding environment 24 hours a day. By installing a hot water blanket on the storage tank, heat loss can be minimized, reducing the amount of time the water heater is firing. It should be noted however that not all water heaters are designed to have insulation, or insulation past a certain R-value, installed around the water heater. Check with the tank maker or online to make sure that a water heater blanket can be used with the make and model of storage tank.

NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including cost)

Measure Savings Assumption: The difference in energy use between unwrapped and wrapped hot water storage tank.

Additional Measure Information: Title 24 requires exterior tank insulation on lower efficiency gas water heaters larger than 50 gallons but does not require tank insulation on other conventional storage tanks. Easy energy savings can be achieved by wrapping the storage tank

with a water heater blanket of the appropriate size. It should be noted however that not all water heaters are designed to have insulation, or insulation past a certain R-value, installed around the water heater. Check with the tank maker or online to make sure that a water heater blanket can be used with the make and model of storage tank.

RECIRCULATION PUMP TIME CLOCK

MULTIFAMILY REHABILITATION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including cost)

Measure Savings Assumption: The difference in energy use between a standard recirculation pump system with and without an operating timeclock on the recirculation pump.

Additional Measure Information: In larger multi-family properties, recirculation pumps are necessary to maintain hot water within the distribution system so that tenants can receive hot water quickly. But recirculation pumps use electricity and at certain points in the day are unnecessary because there is sufficient hot water demand to guarantee hot water in the distribution system. By installing a timeclock to shut off the recirculation pump during these time periods, electricity can be saved by running the recirculation pump less.

Alternatively, a thermostatic control can be installed on the end of the recirculation loop which will turn the recirculation pump on and off depending upon the temperature of the water in the loop. These controls are typically more expensive but also provide additional electricity savings by increasing the amount of time the recirculation pump is off.

MULTIFAMILY NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Full installation cost (including cost)

Measure Savings Assumption: The difference in energy use between a standard recirculation pump system with and without an operating timeclock on the recirculation pump.

Additional Measure Information: By installing a timeclock to shut off the recirculation pump during time periods where there is high hot water demand, electricity can be saved by running the recirculation pump less.

Alternatively, a thermostatic control can be installed on the end of the recirculation loop which will turn the recirculation pump on and off depending upon the temperature of the water in the loop. These controls are typically more expensive but also provide additional electricity savings by increasing the amount of time the recirculation pump is off.

Title 24 requires recirculation pump controls of some sort on high-rise multi-family residential buildings (four stories and above) to turn the pump off when not needed but does not require controls on low-rise residential properties.

HIGH EFFICIENCY WATER HEATER

REHABILITATION PROPERTIES

Measure Priority: Electric—High, Gas—Low

Measure Cost Assumption: Incremental cost. Replaces existing hot water heater upon failure or need of replacement.

Measure Savings Assumption: The difference in energy use between a standard and high efficiency hot water heater.

Additional Measure Information: The energy savings that results from installing a high efficiency electric water heater instead of standard efficiency electric option makes this measure cost-effective because electric water heating is expensive and a small percentage savings can still translate into significant dollar savings. Installing a high efficiency gas water heater instead of a standard efficiency gas option is not as cost-effective because gas water heating is a lower cost option to begin with and the incremental cost to improve the efficiency of a gas water heater is higher than its electric counterpart.

NEW CONSTRUCTION PROPERTIES

Measure Priority: Electric—High, Gas—Low

Measure Cost Assumption: Incremental cost

Measure Savings Assumption: The difference in energy use between a standard and high efficiency hot water heater.

Additional Measure Information: The energy savings that results from installing a high efficiency electric water heater instead of standard efficiency electric option makes this measure cost-effective because electric water heating is expensive and a small percentage savings can still translate into significant dollar savings. Installing a high efficiency gas water heater instead of a standard efficiency gas option is not as cost-effective because gas water heating is a lower cost option to begin with and the incremental cost to improve the efficiency of a gas water heater is higher than its electric counterpart.

PIPE WRAP

REHABILITATION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Full installation cost (including cost)

Measure Savings Assumption: The difference in energy use between unwrapped and wrapped hot water pipes.

Additional Measure Information: Pipe insulation wrapped around hot water pipes reduces the amount of heat lost by the hot water to the outside environment, providing hotter water more quickly to a home's faucets. Reducing this heat loss allows the water heater to work less.

NEW CONSTRUCTION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Full installation cost (including cost)

Measure Savings Assumption: The difference in energy use between un-insulated and insulated hot water pipes.

Additional Measure Information: Title 24 requires pipe insulation on some sections of hot water pipes but many sections of hot water pipe that are not otherwise insulated can be left un-insulated. Energy savings can be achieved by wrapping these pipes in insulation.

HVAC

REFRIGERANT CHARGE ADJUSTMENT

REHABILITATION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Installation cost (including labor)

Measure Savings Assumption: The difference in energy use between an unadjusted and an adjusted typical A/C unit.

Additional Measure Information: Inappropriate refrigerant charge in an A/C unit, typically a low charge, forces the unit to work harder and longer, and can strain the unit, shortening its lifespan. Checking the refrigerant charge level is a simple maintenance step that can translate into large energy savings, especially for older units, which will also help extend the A/C unit's useful life. Given the measure's quick payback, it is highly recommended that existing A/C units have their refrigerant charge checked and adjusted unless it has already been done in the recent past.

NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: The difference in energy use between an unadjusted and an adjusted typical A/C unit.

Measure Savings Assumption: The difference in energy use between an unadjusted and an adjusted typical A/C unit.

Additional Measure Information: In the Central Valley, Title 24 requires that newly constructed properties test and adjust the refrigerant charge on A/C units unless high efficiency windows and air conditioning units are installed. It is highly recommended that a refrigerant charge test and adjustment be done for all new construction regardless of whether high efficiency windows and AC units are installed.

HIGH EFFICIENCY SPLIT SYSTEM A/C HEAT PUMP

REHABILITATION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Incremental cost. Replaces existing A/C Heat Pump upon failure or need of replacement.

Measure Savings Assumption: The difference in energy use between a standard and high efficiency Split System A/C Heat Pump.

Additional Measure Information: This measure shows the increase in savings that can be found by installing a more efficient heating and cooling system instead of the minimum required by Title 24. Additional savings will be achieved over most all existing systems but this savings

would not outweigh the initial upfront cost of a new A/C Heat Pump so it cannot be recommended that a well-functioning existing system be replaced. Instead, it is recommended that a high efficiency system to be invested in when the existing system needs to be replaced as the incremental benefit surpasses the incremental cost of installing a high efficiency system instead of a standard efficiency one.

NEW CONSTRUCTION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Incremental cost

Measure Savings Assumption: The difference in energy use between a standard and high efficiency Split System A/C Heat Pump.

Additional Measure Information: This measure shows the increase in savings that can be found by installing a more efficient heating and cooling system instead of the minimum required by Title 24. The moderate payback period for this upgrade makes this is cost-effective and worthwhile investment.

DUCT SEALING

REHABILITATION PROPERTIES

Measure Priority: Single Family—Moderate, Multi-Family—Low

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between an unsealed duct system and one that has been sealed.

Additional Measure Information: Duct sealing can significantly improve the efficacy of inefficient duct systems by sealing small holes and cracks which persistently leak conditioned air, requiring a household's furnace and AC units to work harder for a home to achieve the same level of comfort. Single family homes tend to benefit more from this measure because they tend to have more ductwork per square foot of conditioned floor space.

NEW CONSTRUCTION PROPERTIES

Additional Measure Information: Title 24 requires that newly constructed properties test and seal ducts unless high efficiency windows and air conditioning units are installed. It is highly recommended that duct sealing be done for all new construction regardless of whether high efficiency windows and AC units are installed.

SHELL

HIGH EFFICIENCY WINDOWS

REHABILITATION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Incremental cost. Replaces existing windows upon need of replacement.

Measure Savings Assumption: The difference in energy use for a household with high-efficiency windows as compared with a household with the current minimum efficiency windows. Existing buildings with less efficient windows (single pane) will save more energy than is assumed here.

Additional Measure Information: High efficiency windows help prevent heat from escaping or entering a house, allowing furnaces and air conditioners to work less to keep a home at a comfortable temperature. Installing new windows at a property is an expensive measure to undertake and the full cost of the project would outweigh any energy savings achieved over the life of the windows. But when windows are being replaced for other reasons, it is very cost-effective to install high efficiency windows instead of standard efficiency windows.

NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Incremental cost

Measure Savings Assumption: The difference in energy use for a household with high-efficiency windows as compared with a household with the current minimum efficiency windows.

Additional Measure Information: Title 24 requires that windows installed in the Central Valley have a U-Factor of 0.57 and a Solar Heat Gain Coefficient (SHGC) of 0.40. More efficient windows can be used at no or little extra cost that will reap significant rewards over the lifetime of the windows and will increase the comfort of the home noticeably.

MOTORS

EFFICIENT POOL PUMP

REHABILITATION PROPERTIES

Measure Priority: Moderate

Measure Cost Assumption: Full installation cost (including labor)

Measure Savings Assumption: The difference in energy use between an inefficient and efficient pool pump.

Additional Measure Information: Typical pool pumps are inefficient and oversized, using too much electricity to circulate more water than necessary. Pools only require a pump that circulates the full volume of the pool once a day. Ideally the pool pump should be sized to circulate the pool's volume in 8-12 hours and should have a timer to ensure that this circulation period happens at off peak hours, typically at night. The standard pool pump only has one speed as well. Further efficiency gains can be achieved by switching to a two-speed pump with

an appropriate controller. These pumps operate in the more efficient low-speed for most applications but can switch to a higher speed for backwashing or vacuuming.

NEW CONSTRUCTION PROPERTIES

Measure Priority: High

Measure Cost Assumption: Incremental cost

Measure Savings Assumption: The difference in energy use between an inefficient and efficient pool pump.

Additional Measure Information: Typical pool pumps are inefficient and oversized, using too much electricity to circulate more water than necessary. Pools only require a pump that circulates the full volume of the pool once a day. Ideally, the pool pump should be sized to circulate the pool's volume in 8-12 hours and should have a timer to make sure this happens automatically. Additionally, the standard pool pump only has one speed. Further efficiency gains can be achieved by switching to a two-speed pump with an appropriate controller. These pumps operate in their more efficient low-speed for most applications but can switch to a higher speed for backwashing or vacuuming.

Intro. Res. No. 1207-13

Laid on Table 3/5/13

Introduced by Presiding Officer, on request of the County Executive

RESOLUTION NO. - 2013 AMENDING LOCAL LAW NO. 36-2012 TO AMEND ADVERTISING IN THE COUNTY TAX MAP ALBUM AND SET BULK PURCHASE ADVERTISING RATES.

WHEREAS, there was duly presented and introduced to this County Legislature at a regular meeting held on a proposed local law entitled "A LOCAL LAW TO AMEND ADVERTISING IN THE COUNTY TAX MAP ALBUM AND SET BULK ADVERTISING RATES,"

and said local law in final form is the same as when presented and introduced; now, therefore be it

RESOLVED, that said local law be enacted in form as follows:

LOCAL LAW NO. 2013, SUFFOLK COUNTY, NEW YORK

A LOCAL LAW TO AMEND ADVERTISING IN THE COUNTY TAX MAP ALBUM AND SET ADVERTISING RATES

BE IT ENACTED BY THE COUNTY LEGISLATURE OF THE COUNTY OF SUFFOLK, as follow:

Section 1. Legislative Intent.

The Legislature hereby finds and determines that the 2013 Operating Budget was amended to authorize advertising in the county's tax map album and to set rates for such advertisements.

This Legislature also finds and determines that advertisements in the tax map albums will provide needed revenue to ensure that the budget remains in balance.

Therefore, the purpose of this law is to authorize bulk purchases of advertisements in the County's tax map album and set the discounted rates for such advertisements.

Section 2. Amendments.

A. Section 3. of Resolutions 1224-2011 and 423-2012 are hereby amended to read as follows:

Section 3.

Advertising Rates Established.

The schedule of rates for the display of advertising on the County Real Property Tax Service Agency Tax Map Albums is hereby previously established and currently AMENDED for bulk rates as follows:

Annual Display Advertising Rates for Annual Suffolk County Tax Map Albums			
	Back Cover	Inside Back Cover	Inside Front Cover
Full Page	\$1,500	\$1,000	\$1,250
Half Page	\$1,000	\$600	\$750
Quarter Page	\$750	\$300	\$500
Eighth Page	\$400	\$200	\$300
*Shelter Island Rates:			
Full Page Only	\$750	\$500	\$650
FULL PAGE - FULL COUNTY	Back Cover	Inside Back Cover	Inside Front Cover
	\$8,000	\$6,000	\$7,000
All rates are for black and white ads.			

The Suffolk County Real Property Tax Service Agency is hereby authorized to sell bulk advertising space in the County's annual tax map albums at discounted rates.

Section 3. Applicability

This law shall apply to all actions occurring on or after the effective date of this law.

Section 4. Severability.

If any clause, sentence, paragraph, subdivision, section, or part of this law or the application thereof to any person, individual, corporation, firm, partnership, entity, or circumstance shall be adjudged by any court of competent jurisdiction to be invalid or unconstitutional, such order or judgment shall not affect, impair, or invalidate the remainder thereof, or part of this law, or in its application to the person, individual, corporation, firm, partnership, entity, or circumstance directly involved in the controversy in which such order or judgment shall be rendered.

Section 5. SEQRA Determination.

This Legislature, being the State Environmental Quality Review Act (SEQRA) lead agency, hereby finds and determines that this law constitutes a Type II action pursuant to Sections 617.5(c) (20) and (27) of the NEW YORK CODE OF RULES AND REGULATIONS (NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection. The Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination of non-applicability or non-significance in accordance with this law.

Section 6. Effective Date.

This law shall take effect immediately upon filing of the Office of the Secretary of State.

DATED: 2013
APPROVED BY:

Steven Bellone
County Executive of Suffolk County

Date:

OFFICE OF THE COUNTY LEGISLATURE

COUNTY OF SUFFOLK

GEORGE NOLAN
COUNSEL TO THE LEGISLATURE
email: george.nolan@suffolkcountyny.gov



WILLIAM H. ROGERS BUILDING
P.O. BOX 6100
HAUPPAUGE, NY 11788-0099
(631) 853-5494 (PHONE)
(631) 853-4415 (FAX)

DATE: March 5, 2013

TO: CLERK OF THE COUNTY LEGISLATURE

RE: MEMORANDUM OF COUNSEL TO THE LEGISLATURE PURSUANT TO RULE 28

PROPOSED LOCAL LAW YEAR 2013

TITLE: I.R. NO. -2013; AMENDING LOCAL LAW NO. 36-2012 TO AMEND ADVERTISING IN THE COUNTY TAX MAP ALBUM AND SET BULK PURCHASE ADVERTISING RATES

SPONSOR: PRESIDING OFFICER, ON BEHALF OF THE COUNTY EXECUTIVE

DATE OF RECEIPT BY COUNSEL: 3/5/2013 **PUBLIC HEARING:** 3/19/13

DATE ADOPTED/NOT ADOPTED: _____ **CERTIFIED COPY RECEIVED:** _____

This proposed local law would amend the advertising schedule for the County's Tax Map Album (codified at §270-9 of the Suffolk County Code) to establish a "Full Page – Full County" rate as follows:

Back Cover - \$8,000
Inside Back Cover - \$6,000
Inside Front Cover - \$7,000

Additionally, this law would authorize the Real Property Tax Service Agency to sell bulk advertising space in the County's annual tax map albums at discounted rates. The discounted rates are not set forth in this law.

This law will take effect immediately upon its filing in the Office of the Secretary of State.

GEORGE NOLAN
Counsel to the Legislature

GN:mjk

s:\rule28\28-tax-map-album-rates

**2013 INTERGOVERNMENTAL RELATIONS
MEMORANDUM OF SUPPORT**

TYPE OF BILL:

An act to amend the fees charged for ads placed in the tax map albums in relation to adding a bulk rate for multiple placements.

PURPOSE OR GENERAL IDEA OF BILL:

Add another possible venue for revenues by enhancing the current fee schedule for advertising in the tax map albums.

SUMMARY OF SPECIFIC PROVISIONS:

Full Page Full County Tax Map Albums in all ten town albums that total 12 books. The discounts will be as followed:

Back Cover: \$8,000 total per annum
Inside Back Cover: \$ 6,000 total per annum
Inside Front Cover: \$ 7,000 total per annum

JUSTIFICATION:

Last year was the first year legislation allowed advertising in the albums. Timing did not permit us to actively pursue clients so public service ads were utilized. This year we have an interested client for a volume placement. We would like to enhance our revenues this year.

FISCAL IMPLICATIONS:

New revenues for 2013 budget and beyond.

SUFFOLK COUNTY REAL PROPERTY TAX

SUFFOLK COUNTY TAX MAP ALBUM DISTRIBUTION LIST 2012-2013

ALBUMS ARE UTILIZED IN EVERY ASSESSOR'S OFFICE, MANY COUNTY OFFICES, REAL ESTATE OFFICES, SURVEYOR AND TITLE COMPANIES, AND A PLETHORA OF OFFICES. FOR A FULL PAGE BACK COVER (AT \$1,500 PER ANNUM) THE EXPOSURE RATE IS APPROXIMATELY SIXTY-ONE

<u>Town</u>	<u>Albums Published</u>
Babylon	150
Brookhaven North	150
Brookhaven Central	150
Brookhaven South	150
East Hampton	400
Huntington	150
Islip	125
Riverhead	225
Shelter Island	150
Smithtown	175
Southampton	400
Southold	220

TOTAL NUMBER OF PUBLISHED ALBUMS 2012: 2445

FOR ADDITIONAL INFORMATION PLEASE CONTACT LARRY@SUFFOLKCOUNTYNY.GOV

COUNTY OF SUFFOLK



STEVE BELLONE
SUFFOLK COUNTY EXECUTIVE

REAL PROPERTY TAX SERVICE AGENCY
AREIS Advanced Real Estate Information System

PENNY WELLS LAVALLE, MAI, CCIM, CCD
DIRECTOR

February 28, 2013

Mr. Jon Schneider
Deputy County Executive

H. Lee Dennison Building
100 Veterans Memorial Highway
P.O. Box 6100
Hauppauge, NY 11788-0099

RE: REQUESTING AN AMENDMENT TO 423-2012 – DISCOUNTING BULK PLACEMENT RATES

Dear Deputy County Executive Schneider:

Please consider my request for an amendment to the Real Property Tax Service Album Advertising Rates¹ for the following reasons:

- ✦ In the original legislation referenced above, I overlooked the fact that a client might place an ad in all the albums we publish at a discount (volume) rate. The amendment should read to provide a bulk rate for ad placement in a full county set.
 - Subscriber's full county set purchase is discounted by law. Discounts would be offered for a full ad (one page) purchase.
 - Time would be saved in securing multi-placement ad approvals; DPW's print shop set-up costs for multi-placement ads; and executing advertising contracts.

Please see the attached the memorandum. Thank you for your time and attention to this matter.

Sincerely,

Penny Wells LaValle

cc: Dennis Cohen, Chief Deputy County Executive
Lisa Santeramo, Assistant Deputy County Executive
Tom Vaughn, Director of Intergovernmental Relations

Enc. Resolution
2013 MOS
Album publishing report 2012-2013

¹ RESOLUTION NO. 423 – 2012, ADOPTING LOCAL LAW NO. 36-2012, A LOCAL LAW TO AMEND ADVERTISING IN THE COUNTY TAX MAP ALBUM AND SET ADVERTISING RATES.

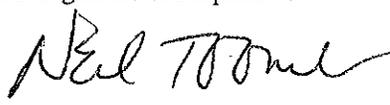
300 Center Drive

Riverhead, New York 11901-3398

Phone: (631) 852-1550; Fax: (631) 852-1566 Email: pennywells.lavalle@suffolkcountyny.gov

CONFIDENTIAL

STATEMENT OF FINANCIAL IMPACT
OF PROPOSED SUFFOLK COUNTY LEGISLATION

1. Type of Legislation Resolution <input checked="" type="checkbox"/> Local Law _____ Charter Law _____		
2. Title of Proposed Legislation RESOLUTION NO. -2013 AMENDING LOCAL LAW NO. 36- 2012 TO AMEND ADVERTISING IN THE COUNTY TAX MAP ALBUM AND SET BULK PURCHASE ADVERTISING RATES.		
3. Purpose of Proposed Legislation SAME AS ABOVE		
4. Will the Proposed Legislation Have a Fiscal Impact? Yes ___ No <input checked="" type="checkbox"/>		
5. If the answer to item 4 is "yes", on what will it impact? (circle appropriate category)		
County	Town	Economic Impact
Village	School District	Other (Specify):
Library District	Fire District	
6. If the answer to item 4 is "yes", Provide Detailed Explanation of Impact		
7. Total Financial Cost of Funding over 5 Years on Each Affected Political or Other Subdivision. none		
8. Proposed Source of Funding 2013 OPERATING BUDGET		
9. Timing of Impact -		
10. Typed Name & Title of Preparer Neil Toomb Intergovernmental Relations Coordinator	11. Signature of Preparer 	12. Date: 3/5/13