THURSTON COUNTY
WASHINGTON
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Thurston County, WA

January 22-23, 2010

Financing Options

A Smart Investment

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- ACEEE concludes that over **1.63 million jobs** are supported by energy efficiency nationwide, and that the market can produce a total of **$7 trillion** in cost-effective energy investment through 2030

- Energy efficiency alone can reduce national energy consumption by as much as **30%** without any reduction in our quality of life

- Energy efficiency retrofits and clean energy generate productivity now, offer significant return on investment over time, and mitigate the costs of climate change.

Clean Energy Has Been Around – What's Changing?

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- Shifting from incentives to direct financing
- Simultaneously shifting from direct financing to markets
- Creating a public/private role for policy and institutions that mitigate risk

Barriers to Investment

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- A clean energy strategy requires up-front investment of capital
- Governments are more effective as *catalysts*
  - insufficient public capital, whether liquid or in bonding capacity, to access all the cost-effective energy-efficiency in the market
  - little reason for governments to bear the entire financing burden – clean energy is profitable
- Financing tied to standards, implementation, and quality assurance (QA)

Creating a Baseline

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- Utility structure and involvement
  - Data and facilitation as important as financial involvement
- State/local/private financial capacity
  - Restrictions on public capital use and blending
- Catalog of existing programs
  - How can new capital stream leverage existing programs?
- Inter-jurisdictional cooperation
  - Any successful clean energy program will require champions at multiple levels of government

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Thurston County – Leading the Way

- TCEDC already engaged in clean energy for economic development
- Thurston Community Energy Efficiency Program
  - Public dollars for a loan-loss reserve fund
  - Leveraged private investment
  - Multi-jurisdictional partners
- TCAT establishing a brand and outreach presence

Thurston Community Energy Efficiency Program

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- Connects residences and businesses to implementation actors, contractors, and incentives
- Develops a portfolio of participating financial institution
- Catalyzes community demand
- Builds partnerships with PSE and water/sewage utility for greater leverage
- Creates a stream of data for future innovation

TCEEP – Additional Points

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- Facilitation as important as financing
  - Often overlooked by jurisdictions
- Size of loan matters in consumer loan model
  - Portland CEW has shown larger than expected loans at ~ $10K
- Administration/planning can eat into savings "delta"
  - Economies of scale possible with community scale ESIPs
- Underwriting critical – LRFs linked to mortgages piggyback on collateral

Building to Scale

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- TCEEP uses one-time dollars for leverage; scaling requires a stream of low cost capital
- TCEEP puts most difficult pieces in place with implementation
- Data stream and work with PSE opens door to scaling opportunities
- Scaling requires:
  - Unified, facilitated flow of low cost capital
  - QA linked to capital requirements
  - Capital linked to appropriate returns in aggregation

Why Clean Energy and Retrofits?

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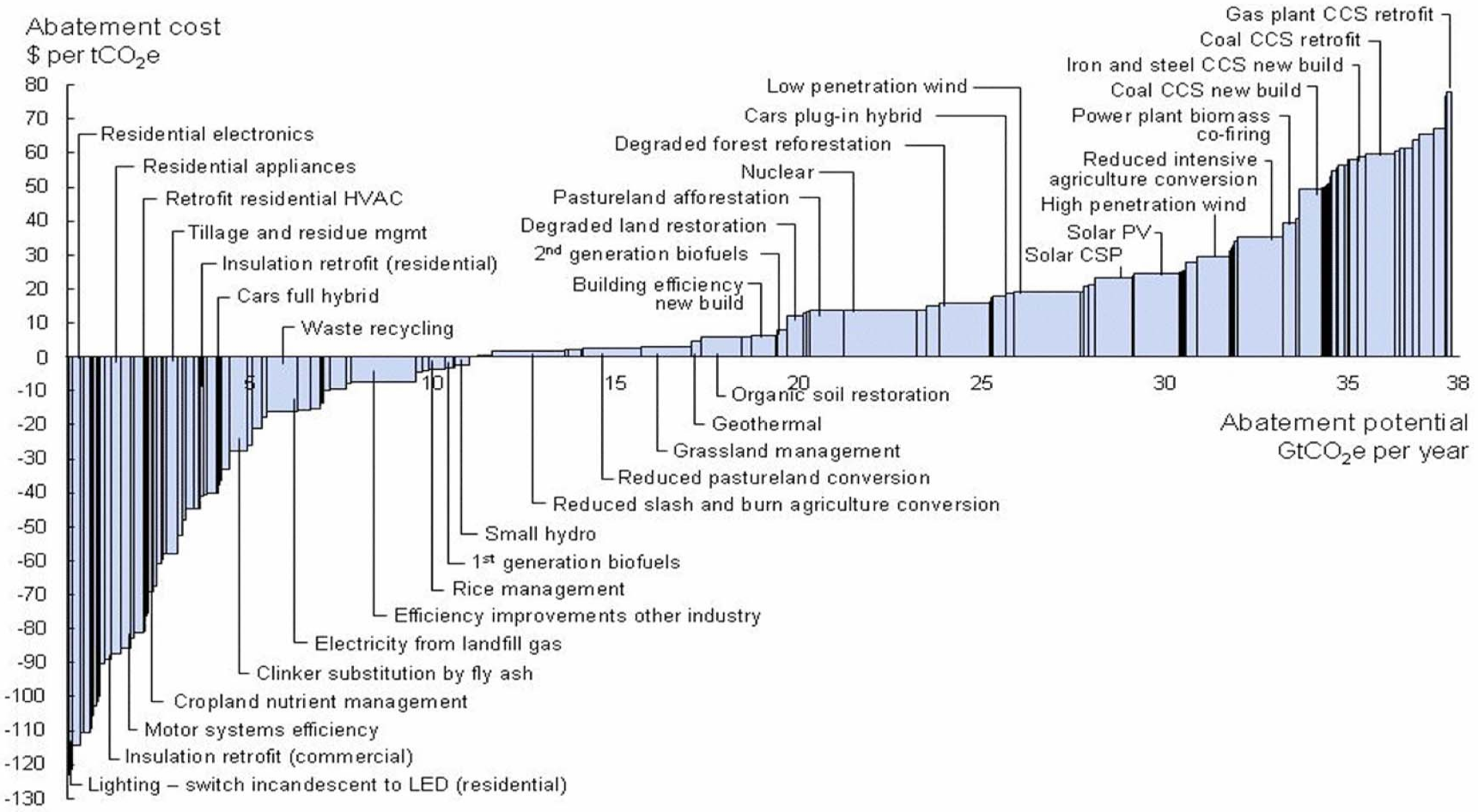
Global GHG abatement cost curve beyond business-as-usual, 2030



Source: McKinsey and Company, as found at www.climateprogr

Key Strategy – Marginal ROI

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- Price of energy uncertain
- Cost of capital uncertain
- Information on stream of benefits from EE projects getting better – TCEEP creating data stream
- Make financing and implementation flexible to match capital to aggregate return so that blended return is on the margin of market acceptability

FINANCING PROGRAM ELEMENTS

SOURCES OF CAPITAL	FINANCING MECHANISM	COLLECTION MECHANISM	ENHANCE-MENTS	ELIGIBLE MEASURES	UNDERWRIT-ING CRITERIA	SECURITY INTERESTS
Banks	Personal loan (secured or unsecured)	Amortized payment bill	Reduced interest rates	Energy efficiency	Debt to income ratio	Unsecured
Public benefit charge or added to rate base	Mortgage / home equity (secured to real estate)	Lease payment	Stretched underwriting criteria	Renewables	FICO score	UCC fixture filing
Utility general funds	Line of credit (secured or unsecured)	On utility bill	Guarantees	Other home improvements	Utility bill payment history	Mechanics lien
Federal, state or local govt funds	Lease	On property tax bill	Loan loss or late payment reserves		Tax payment history	Other lien on real estate
Municipal bonds	Retail installment contract	Performance contract bills	Rebates		Other	Lien on other property (car, boat, etc)
Manufacturers	Special tax or assessment levied	Buy kWh or therms	Tax credits			Disconnection for non-payment
Pension funds	Tariffed installation program		Subsidized transaction costs			
Housing or economic dev finance agency	Performance contract		Aggregation			
Qualified energy conservation bonds	Power purchase agreement		Environmental or carbon credits			
Other 3rd party						

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Scalable Financing Methods

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- PACE property tax models
- On-bill financing models
- Energy performance contracting
- Energy portfolio strategies

PACE local jurisdictions issue bonds for clean energy, the proceeds from which are loaned to property owners for installation and paid back through an assessment on the property tax bill.

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Advantages

- Offers financing at low cost of capital due to the security of the property tax mechanism and low overhead costs
- Allows local governments to finance retrofits directly, without direct involvement in financing or collection from utilities
- Provides long-term loans are easily transferable on the property tax bill
- Simplifies repayment process for both lender jurisdiction and property owner

Disadvantages

- Creates discrepancy between property tax payment and utility savings, which can lead to behavioral regression in energy savings
- Does not address the misalignment of incentives for non-owner-occupied structures and multifamily
- Is based on a traditional local government financing mechanism and requires joint action or collaboration to achieve scale
- Depends on the willingness of the consumer to opt-in to higher property tax rates
- Places much of the risk for poor energy performance and savings on the property owner

Recent On-bill models use public, or a blend of public and private capital, to finance retrofits through third-party entities that partner with utilities to use the energy bill as a collection mechanism.

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Advantages

- Separates the financing and repayment mechanisms to allow for blending multiple types of capital from various public and private sources
- Allows participating consumers to see simultaneously the benefits and costs of the retrofit
- Aligns incentives to allow for many types of non-owner-occupied structures to participate
- Adapts better to low-income residences
- Leverages one-time dollars efficiently while mapping financing to positive paybacks
- Allows more options for integrating financing for structural improvements necessary before the retrofit
- Allows for low-risk utility involvement and the ability to capture energy use data on a project by project basis.

Disadvantages

- Creates uncertain and variable security for the loans, from standard liens, to utility shut-off for non-payment, to super-priority liens
- Leads to potentially higher interest rates or lack of underwriting
- Operates across a patchwork of utilities and regulatory environments
- Operates in structures that may be served by more than one utility, with the potential to incent fuel switching
- Blends capital and implementation in ways that are frequently more complex than other models
- Requires consumer to opt-in and places most risk on the consumer

Energy performance contracting is often performed by energy services companies (ESCOs) that typically work with large buildings and install, maintain, and manage efficiency on a contract basis. ESCOs are paid out of a portion of the savings they generate.

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Advantages

- Private sector driven and financed, with all risk on the ESCO
- Investments limited only by length of payback
- Built in incentives to maximize energy performance and productivity
- Brings enough capital to finance retrofits of large structures

Disadvantages

- Requires detailed contracts and monitoring of savings and performance
- Infeasible for smaller buildings and residences
- Long-term contracts limit applicability in many commercial structures

Energy Portfolio Strategies

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- Allow for more than just retrofits:
  - Demand side management
  - Transportation integration
  - Utility efficiency
- Removes burden from property owner
- Operates best at scale
- BUT: requires utility with incentive and ability to manage

What Would 80% GHG Reductions Look Like?

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Efficient Buildings

- 30% or more beyond code
- No cooling service
- Waste heat recovery

Efficient Infrastructure

- Load diversification = lower peak
- More efficient equipment
- 20% improvement

Clean, renewable energy

- Sewer heat recovery = base load
- Solar thermal supplement
- Natural gas peak/back-up; potential to fuel switch

Utility service model

- Neighborhood scale focus
- Business planning process
- Positioned to engage new system development options

Examples of Other Programs

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- Clean Energy Works Portland
  - Most applicable to future success in Thurston
- Cambridge Energy Efficiency Alliance
  - Older model of Thurston concept
- Boulder, CO
  - Paid for by carbon tax
- Babylon, NY
  - Capitalized out of solid waste reserve fund
- Delaware Sustainable Energy Utility

Getting from TCEEP to Scale

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- Select scalable financing strategy
  - Link to early, catalytic projects
- Identify sources of capital
  - PACE enabling legislation required?
  - Any ability to use public bonding for private benefit?
- Create capital assembly platform for blending
- Use TCEEP implementation and outreach models, driven by TCEEP data

Aggregation Creates Security and Depth

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- Identify the resource (TCEEP in progress)
- Aggregate the resource
- Deliver the resource to investors

Residential Retrofits - Portland

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ELECTRIC

MEASUREDESC	Utility	Average Cost	Cost over Measure Life	Levelized Cost ($/kWh)	Average Savings	Utility Savings Y1	Utility Savings Y28	Total Utility Savings for 28 years	LevelizedA Annual Utility Savings	Simple Payback
SF Air Sealing, Ele Heat	ELE	$ 453.43	$ 10.08	$ 0.01	1,018	94.987	134.72	3300.70	117.88	3.85
SF Duct Sealing, Ele Heat	ELE	$ 812.57	$ 18.06	$ 0.02	733	68.417	97.037	2377.43	84.908	9.57
SF Ceiling/Attic Insulation, Ele Heat	ELE	$ 854.78	$ 19.00	$ 0.03	727	67.805	96.168	2356.15	84.148	10.16
SF Wall Insulation, Ele Heat	ELE	$ 1,134.40	$ 25.21	$ 0.03	908	84.699	120.13	2943.20	105.11	10.79
SF Floor Insulation, Ele Heat	ELE	$ 1,413.47	$ 31.41	$ 0.03	1,021	95.286	135.14	3311.07	118.25	11.95
SF Duct Insulation, Ele Heat	ELE	$ 605.92	$ 13.46	$ 0.06	216	20.149	28.577	700.15	25.005	24.23
SF Heat Pump, Ele Furnace Replacement HSPF 8.1	ELE	$ 8,044.03	$ 446.89	$ 0.18	2,520	235.07	333.41	8168.58	291.73	27.57
Clothes Washer, MEF 2+, Ele DHW, Ele Dry	ELE	$ 892.60	$ 63.76	$ 0.41	154	14.398	20.421	500.33	17.869	49.95
Windows SF Ele	ELE	$ 5,112.17	$ 113.60	$ 0.24	479	44.677	63.365	1552.47	55.445	92.20
Clothes Washer, MEF 2+, Gas DHW, Ele Dry	ELE/GAS	$ 894.24	$ 63.87	$ 0.38	167	15.592	22.114	541.81	19.35	46.21
Clothes Washer, MEF 2+, Ele DHW, Gas Dry	ELE/GAS	$ 900.90	$ 64.35	$ 0.39	166	15.513	22.002	539.04	19.252	46.80
		$ 6,167.17							553.18	11.149

$6,200

11

Residential Retrofits - Portland

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New Energy Solutions

GAS											
MEASUREDESC	Utility	Average Cost	Annual Cost over Measure Life	Levelized Cost ($/kWh)		Average Savings	Utility Savings Y1	Utility Savings Y28	Total Utility Savings for 28 years	LevelizedA Annual Utility Savings	Simple Payback
SF Ceiling/Attic Insulation, Gas Heat	GAS	$ 824.95	$ 18.33	$ 0.45	41	50.952	50.932	1336.69	47.739	17.28	
SF Air Sealing, Gas Heat	GAS	$ 437.02	$ 9.71	$ 0.53	18	22.85	22.842	599.47	21.41	20.41	
SF Wall Insulation, Gas Heat	GAS	$ 1,304.20	$ 28.98	$ 0.55	52	65.489	65.464	1718.07	61.36	21.26	
SF Floor Insulation, Gas Heat	GAS	$ 1,267.59	$ 28.17	$ 0.56	50	63.103	63.079	1655.47	59.124	21.44	
SF Duct Sealing, Gas Heat	GAS	$ 706.14	$ 15.69	$ 1.02	15	19.286	19.279	505.96	18.07	39.08	
Duct Insulation Gas	GAS	$ 578.79	$ 12.86	$ 1.32	10	12.176	12.171	319.42	11.408	50.74	
Gas Furnace w/ ECM Blower	GAS	$ 5,025.32	$ 279.18	$ 3.96	70	88.26	88.226	2315.45	82.695	60.77	
Clothes Washer, MEF 2+, Gas DHW, Gas Dry	GAS	$ 914.67	$ 65.33	$ 9.94	7	8.2332	8.23	215.99	7.7141	118.57	
Windows SF Gas	GAS	$ 5,359.60	$ 119.10	$ 3.41	35	43.752	43.735	1147.81	40.993	130.74	
High Efficiency Gas Boiler	GAS	$ 8,284.99	$ 460.28	$ 14.38	32	40.065	40.05	1051.09	37.539	220.70	
SF Gas Boiler	GAS	$ 9,648.92	$ 536.05	$ 16.61	32	40.398	40.383	1059.83	37.851	254.92	
		$ 6,033.36							226.82	26.599	

$6,000

26.5

Commercial Retrofits - Portland

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New Energy Solutions

MEASUREDESC	Category	Utility	Average Cost	Total Cost	Average Incentive	Average Savings	Utility Savings Y1	Utility Savings Y28	Total Utility Savings for 28 years	LevelizedA Annual Utility Savings	LevelizedA Annual Utility Savings per Measure	Simple Payback
Occupancy Sensor, ceiling mount, 180+ watts connected load	Controls	ELE	$ 103.20	$ 309.60	$ 47.36	356	$ 26.71	$ 36.67	$ 899.22	$ 32.12	$ 96.35	3.21	
T5HO4-lamp fixture	Lighting-HO	ELE	$ 307.83	$ 615.66	$ 69.74	909	$ 68.14	$ 93.55	$ 2,294.27	$ 81.94	$163.88	3.76	
New Exit Sign, LED	Exit Sign	ELE	$ 101.85	$ 203.71	$ 15.34	294	$ 22.05	$ 30.27	$ 742.44	$ 26.52	$ 53.03	3.84	
Direct-Fired Convection Oven	Oven	GAS	$ 2,991.56	$ 598.31	$ 842.67	595	$ 682.82	$ 673.66	$ 17,683.25	$ 631.54	$126.31	4.74	
High-pressure sodium or metal halide, more than 175 watts	Lighting-Halide	ELE	$ 314.15	$ 62.83	$ 26.48	656	$ 49.23	$ 67.59	$ 1,657.63	$ 59.20	$ 11.84	5.31	
10 HP Motor	Motor	ELE	$ 611.43	$ 611.43	$ 100.00	1,157	$ 86.80	$ 119.18	$ 2,922.65	$ 104.38	$104.38	5.86	
Ice Machine up to 500 lb	Ice Machine	ELE	$ 2,123.03	$ 424.61	$ 300.00	2,397	$ 179.78	$ 246.83	$ 6,053.18	$ 216.18	$ 43.24	9.82	
2-lamp 4-ft T12 to 2-lamp 4-ft Prem.T8 & Eff. Elec. Ball.	Lighting	ELE	$ 53.92	$ 539.18	$ 14.54	159	$ 11.95	$ 16.41	$ 402.43	$ 14.37	$143.73	3.75	
Freezer (48 ft^3)	Freezer	ELE	$ 3,040.89	$ 608.18	$ 150.00	1,319	$ 98.93	$ 135.82	$ 3,330.82	$ 118.96	$ 23.79	25.56	
Refrigerator (48 ft^3)	Refrigerator	ELE	$ 2,562.23	$ 512.45	$ 150.00	885	$ 66.40	$ 91.17	$ 2,235.84	$ 79.85	$ 15.97	32.09	
			$ 12,210.10	$ 4,485.95		8,728					$782.51	5.733	

$12,200

5.7

Bundled Retrofits - Portland

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Building Type	*Buildings in Project*	*Total Measure Cost*	*Scale Discount*	*Incentives*	*Net Cost*	*Total Annual Savings*	*Project Simple Payback*	*IRR*
Commercial	500	$ 2,242,976				$ 391,254		
SF Residential - Elecric	2500	$ 15,417,917				$ 1,382,950		
SF Residential - Gas	7500	$ 45,250,174				$ 1,701,182		
	10,500	$ 62,911,067		0%	$ 62,911,067	$ 3,475,385	18.1	4%

10,500

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Activity	Annual Investment (20-year program)	Net Multiplier	Net Regional Economic Impact	Job Factor (per $1M)	Total Job Creation	Tax benefits
Energy Efficiency	$ 63,000,000	1.6	$ 100,800,000	6	378	
Solar	$ 52,000,000	1.9	$ 98,800,000	8	416	
District heating/cooling	$ 15,000,000	1.6	$ 24,000,000	6	90	
	$ 130,000,000		$ 223,600,000		884	$ -

$130,000,000

$223,600,000

884

Why Finance Retrofits and Sustainable Energy Systems?

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- Maximizes economic stimulus – jobs that can't be outsourced
- Increases productivity of energy
- Cost-savings for the community and businesses
- Puts Thurston in a position to attract private investment

The Best Strategies Leverage a Portfolio of Investments

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- Blend residential, commercial, and public building retrofits for broadest job creation benefits
- Leverage renewable energy investments with energy efficiency investments to shorten pay-back
- Bring in additional dollars by blending public financing options with private investment

Rapidly Changing Landscape

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California approves $3.1 Billion energy efficiency program (September 28, 2009)

- 130,000 homes, 20% reduction, by 2012

New York initiatives

- CPC ~ $1B, 15,000 housing units, 3 years
- Green Job/Green New York ~ $5B, 1M homes, 5 years, 16,000 jobs

Oregon initiatives

- EEAST legislation
  - Dramatic streamlining for building retrofit strategies
  - Pathway for multiple forms of capital, private and public
- Portland Clean Energy Works