



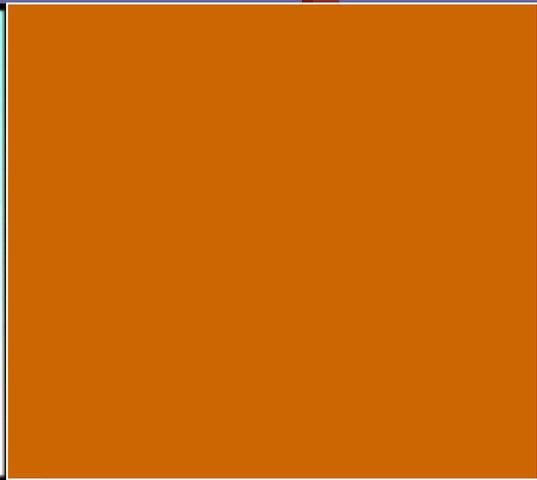
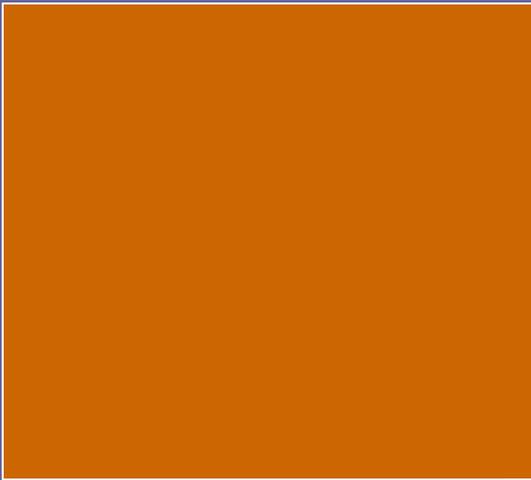
The Massachusetts Model for, and economic rationale for, low-income energy programs

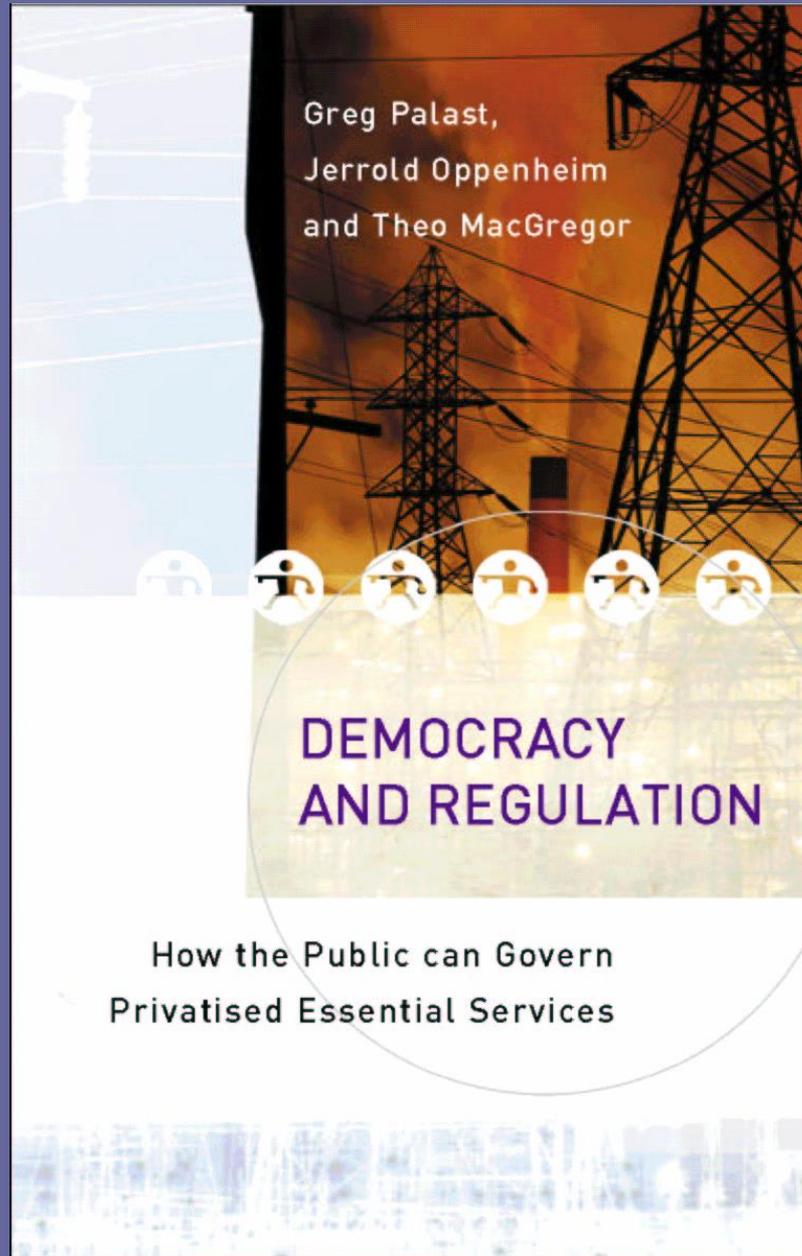
Jerrold Oppenheim

Theo MacGregor

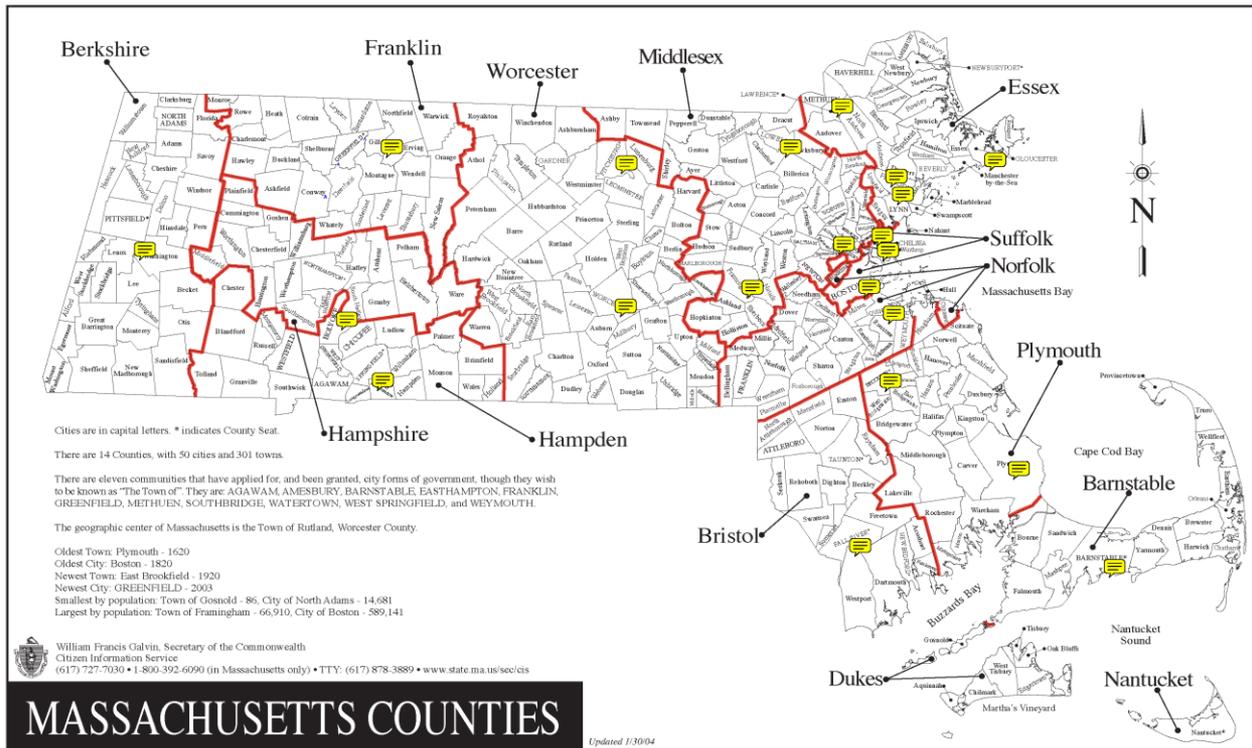
IncluESEV Transatlantic dialogue on energy
efficiency, energy poverty and fairness in
climate policy

Durham, NC, US October 6, 2011



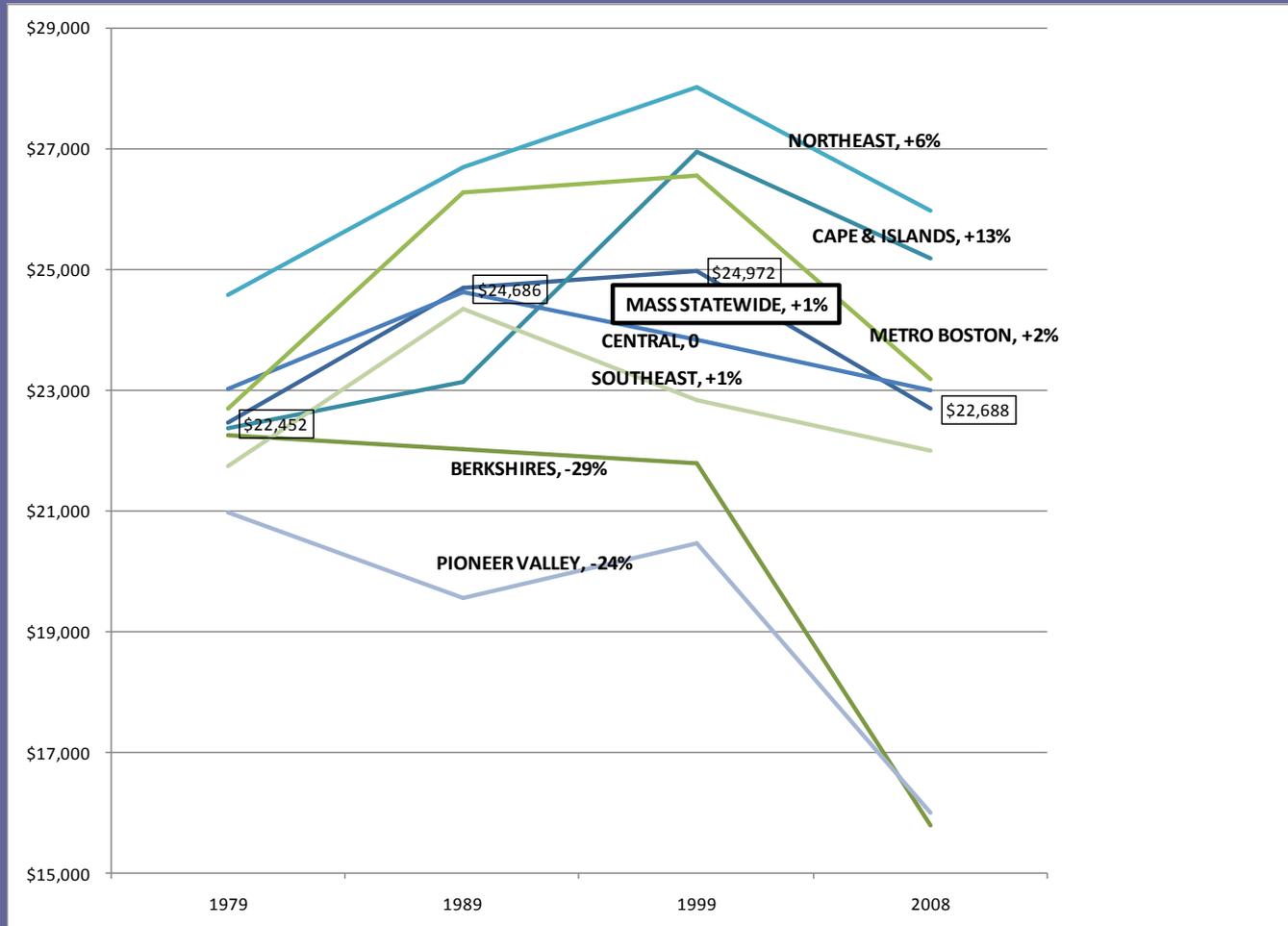








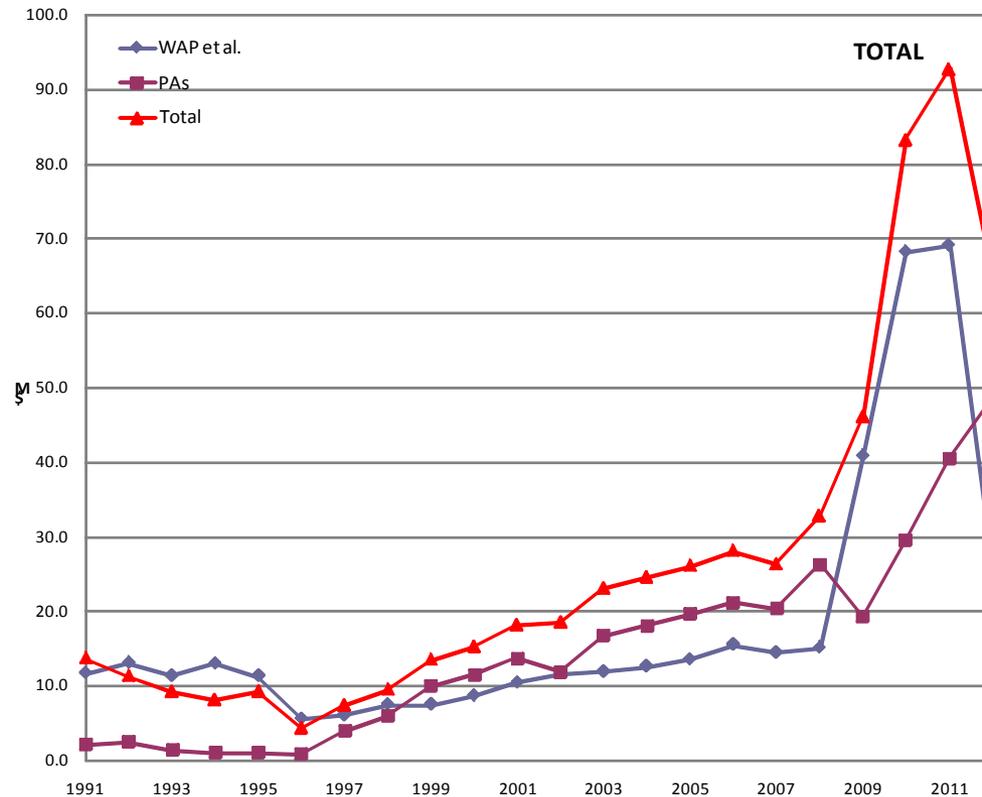
Low-income economics





Energy efficiency safety net

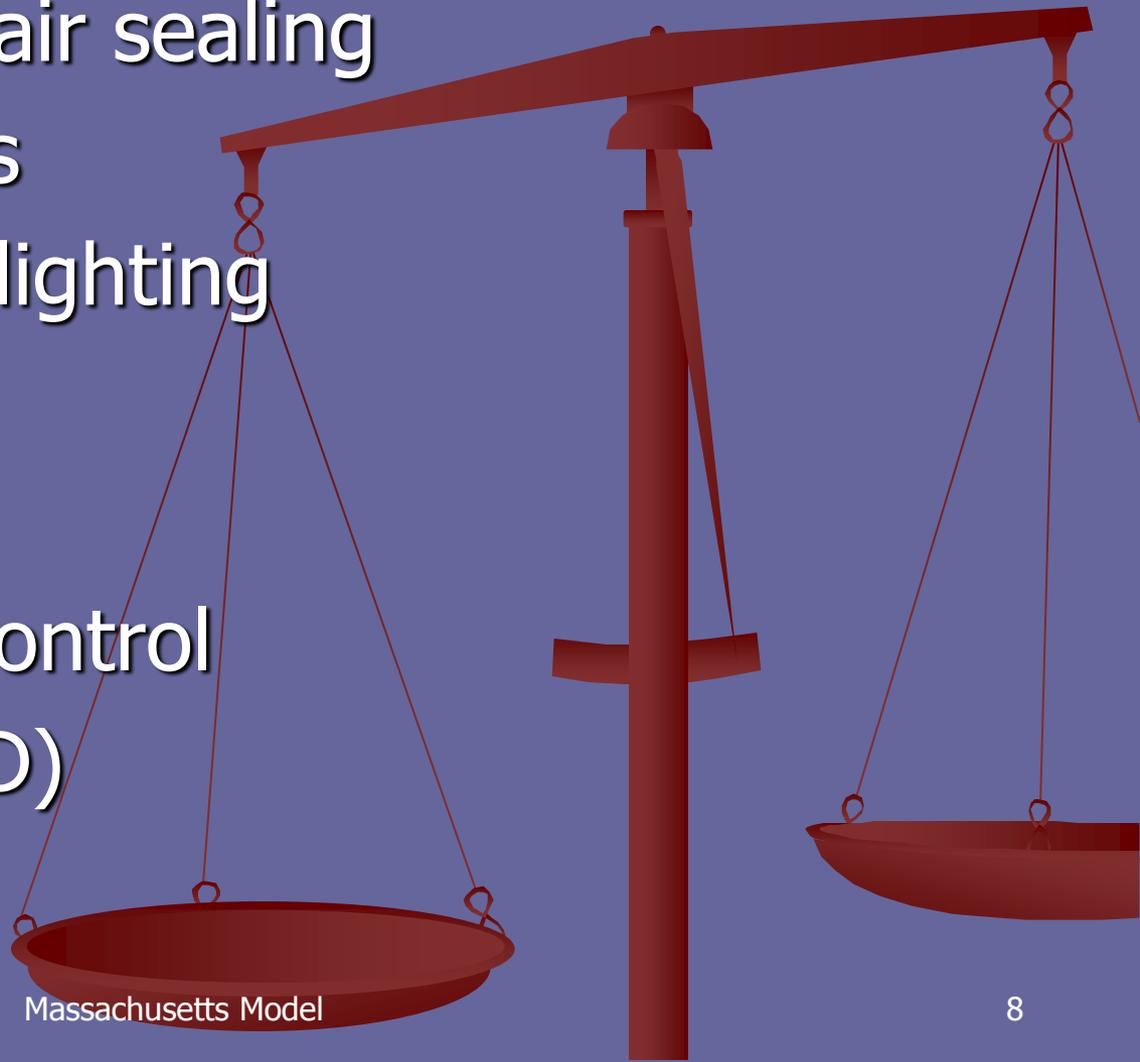
Massachusetts Low-Income Energy Efficiency Expenditures:
Utilities and Cape Light Compact (PAs), Federal/Other, Total
1991-est. 2012





Energy efficiency

- Weatherization air sealing
- Heating systems
- Appliances and lighting
- Comprehensive
- Good jobs
- 100% Quality Control
- Innovation (R&D)





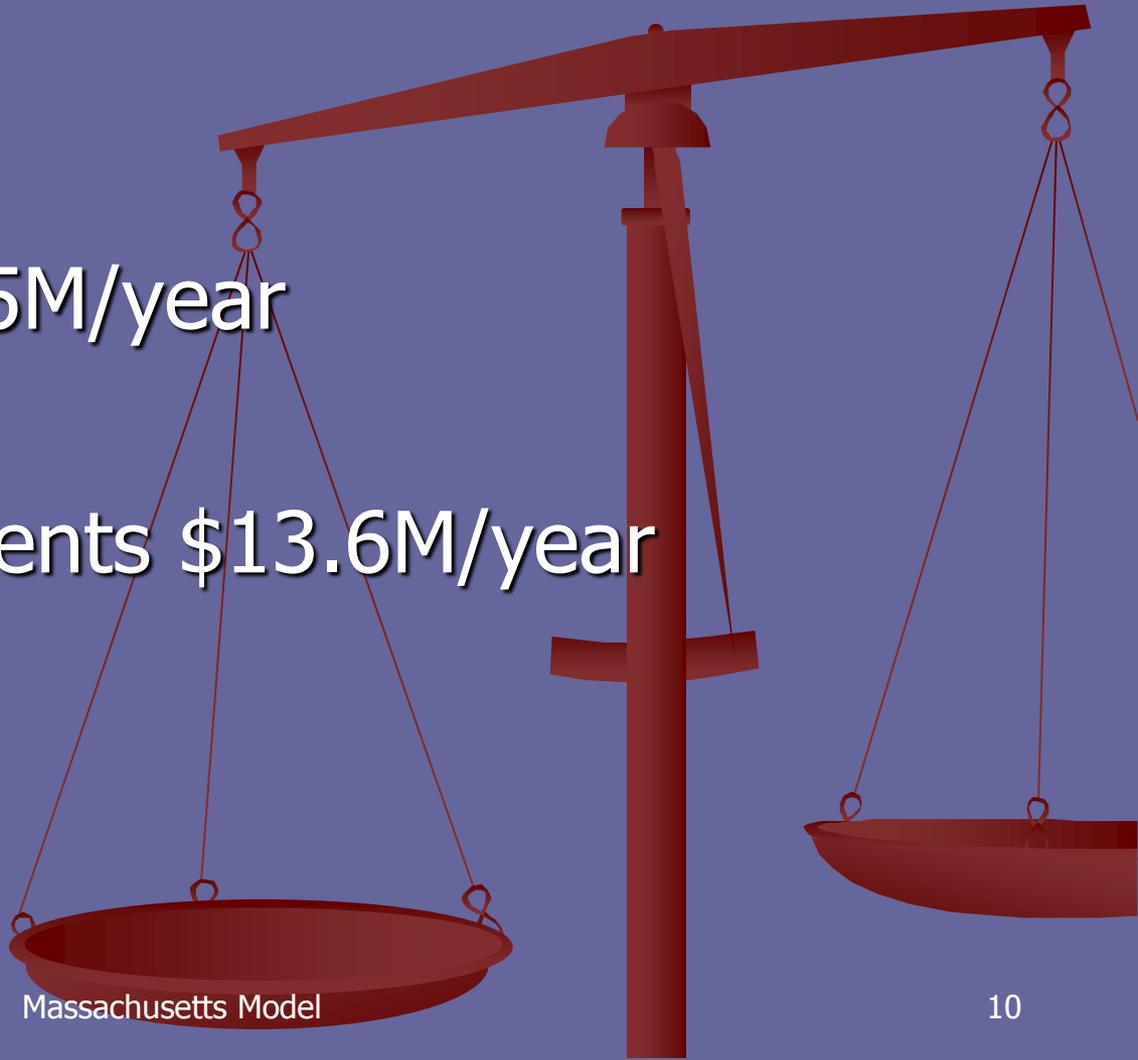
Energy services safety net

- Customer service protections
 - Billing & collection rules
 - Payment plans
 - Winter termination moratoria
 - Serious illness, infants, elderly moratoria
 - Universal service policy
- Rate discounts
- LIHEAP (Fuel Assistance)



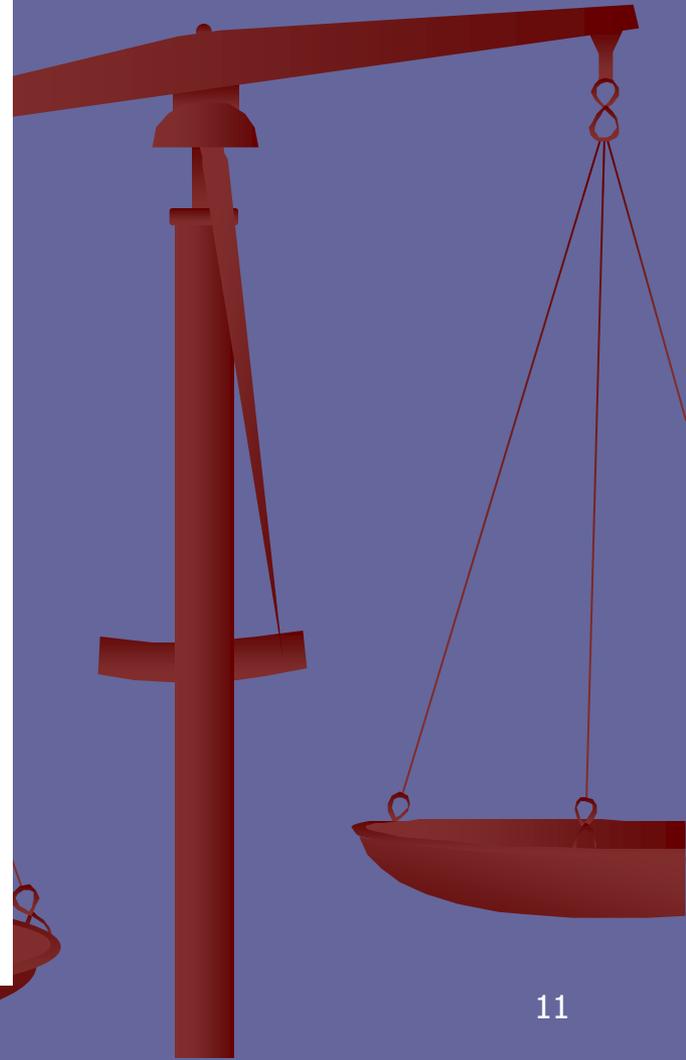
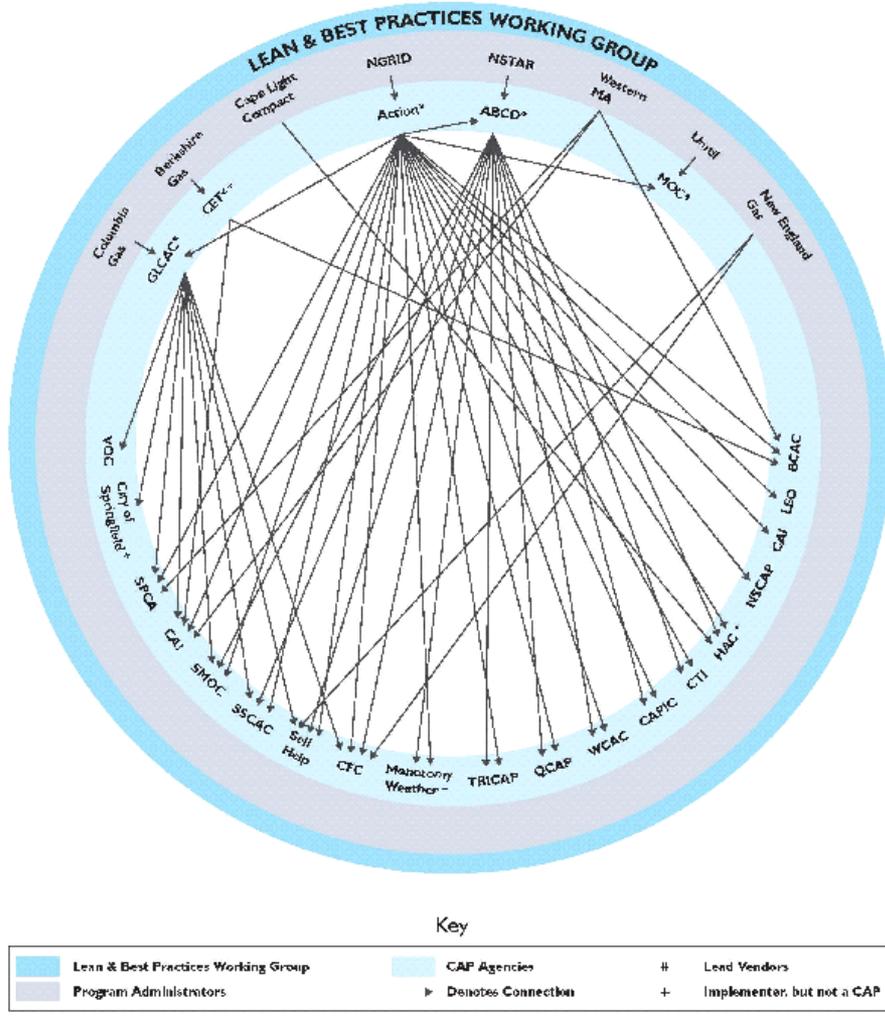
Arrearage Management

- Bill credits \$14.5M/year
- Customer payments \$13.6M/year





The net behind the net





Not the ideal program

- Political adaptation
 - Environment
 - Economic development
 - Cost-effectiveness

- Need strong analysis ...

- ... and advocacy





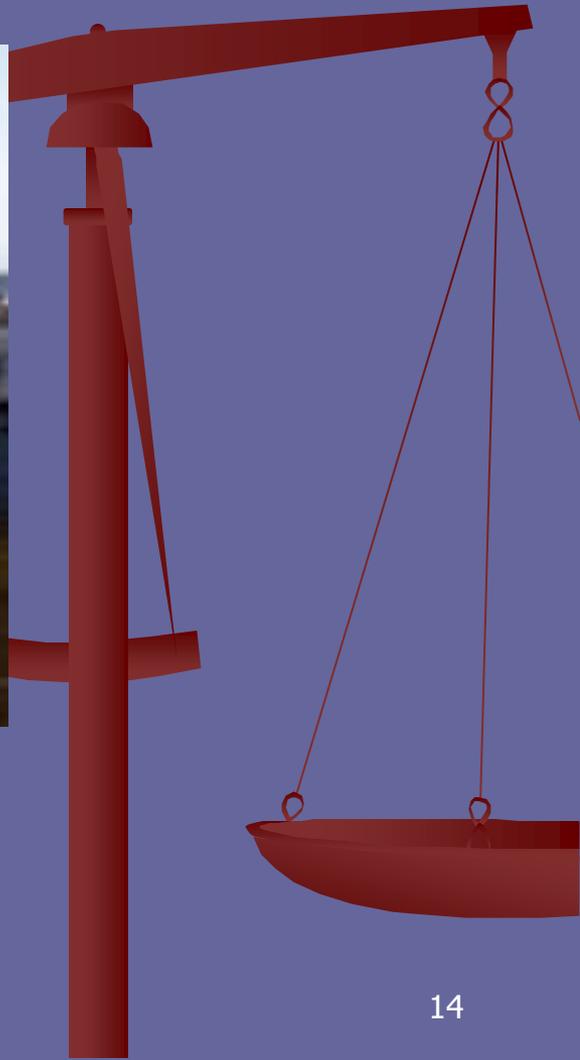
But effective

■ Achievements

- About 100,000 homes weatherized
 - About 16,000 heating systems replaced
 - 130 contractors, 94 auditors, good wages
 - Savings 20% (air sealing), 10% (electricity), 25% (heating system)
 - Saved 1400 low-income housing units
 - Innovation: cost-effective SDHW, MCHP, LEDs
- But reach no more than 40%
- And under attack politically



COST-EFFECTIVENESS





LOW INCOME NON-ENERGY BENEFITS				
\$ Values per participant per year (unless noted)				
Benefit	Current	Recommendations		
	PA (some variation)	NMR	LEAN	
UTILITY				
Arrears	3.66	2.61	3.66	
Write offs		3.74	3.74	
Termination & reconnection		0.43	3.51	
Discount	compute	compute	compute	
Customer calls		0.58	2.06	
Notices		0.34	1.58	
Emergency calls (gas only)		8.43	7.83	
Insurance		WAP Eval.	0.08	
UTILITY SUBTOTALS (ex discount)	3.66	16.13	22.45	
PARTICIPANT				
Bill savings		0.00	473.00	
Comfort		101.00	205.00	
Environmental responsibility		0.00	112.00	
Quiet (Noise reduction)		30.00	132.50	
Light quality/life		0.00	103.00	
Lighting O&M	30	30.00	30.00	
Property value (one-time)	20.73/\$ saved: 2638.26(Wx), 2724.42 (heat)	949.00	14190 \$30/\$ saved	
Buffers price incr (stability)		0.00	386.00	
Forced Mobility, Homelessness	50	0.00	50.00	
Durable homes, less maint.		35.00	146.00	
Equip. & appl. Maintenance		54.00	116.00	
Health	150	19.00	150.00	
Safety: Fire	3.25	38.67	38.67	
Safety: CO		6.38	6.38	
Product performance [refrig.]	200	200.00	200.00	
Window air conditioner	104	49.50	104.00	
Bill-related calls		0.00	4.09	
Termination & reconnection		0.00	43.48	
Transaction costs		0.00	2.50	
SUBTOTALS (annual)	307.25	363.55	2102.62	
<i>One time (property value, refrigerator)</i>	2881.34	1149.00	14390.00	
LOW-INCOME RENTAL OWNERS - \$ Values per housing unit per year (unless noted)				
Ease of finding renters		0.96	0.90	
Property value		17.03	see above	
Equip. maint. (HVAC)		3.91	7.81	
Lighting maintenance		66.73	97.56	



NEBs

- Utility
- Participant
- Societal





Utility benefits

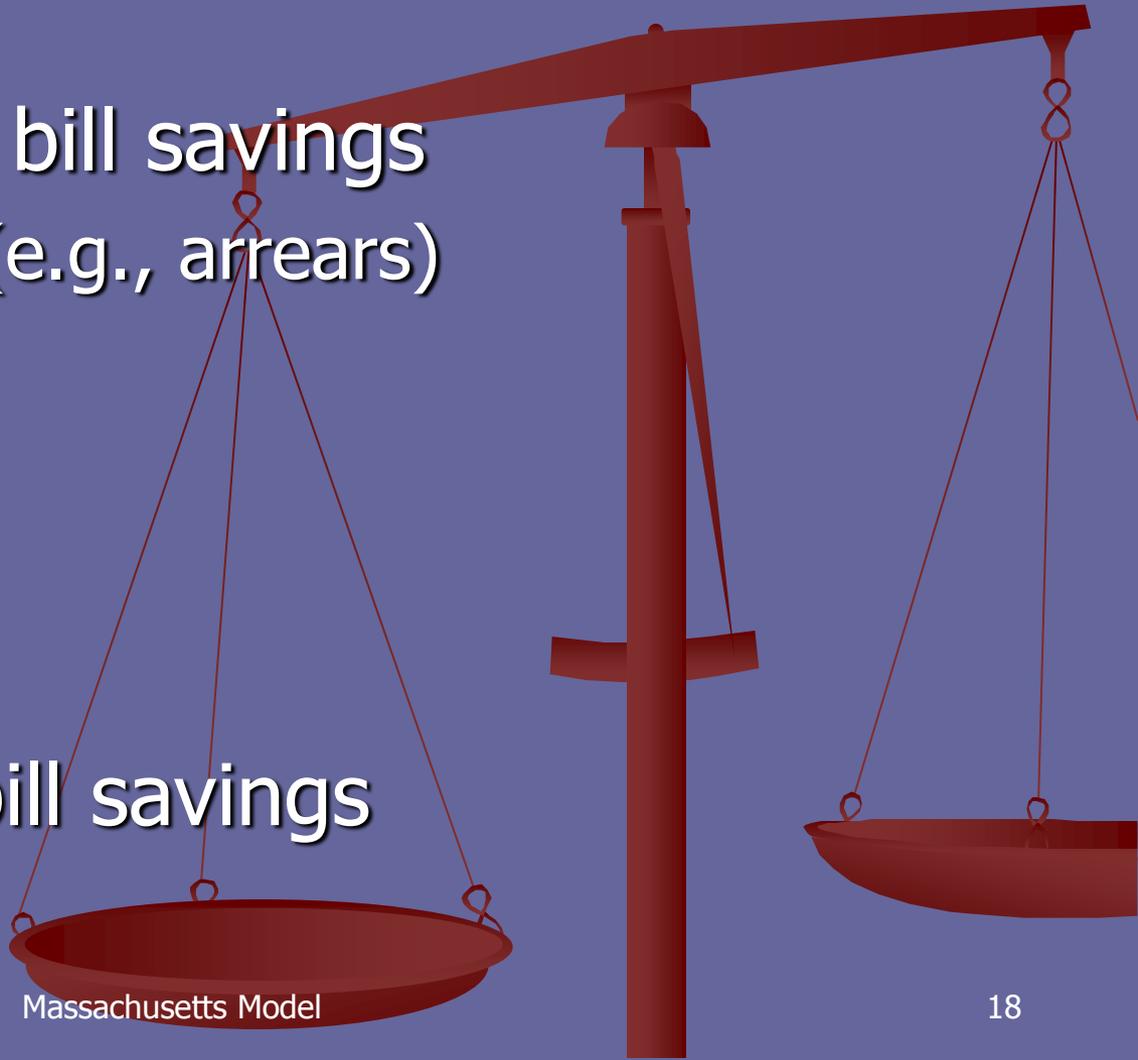
- Easy to quantify
- Small





Participant benefits

- Many flow from bill savings
 - Utility benefits (e.g., arrears)
 - Health
 - Forced mobility
 - Property values
- Different from bill savings





Participant: Health

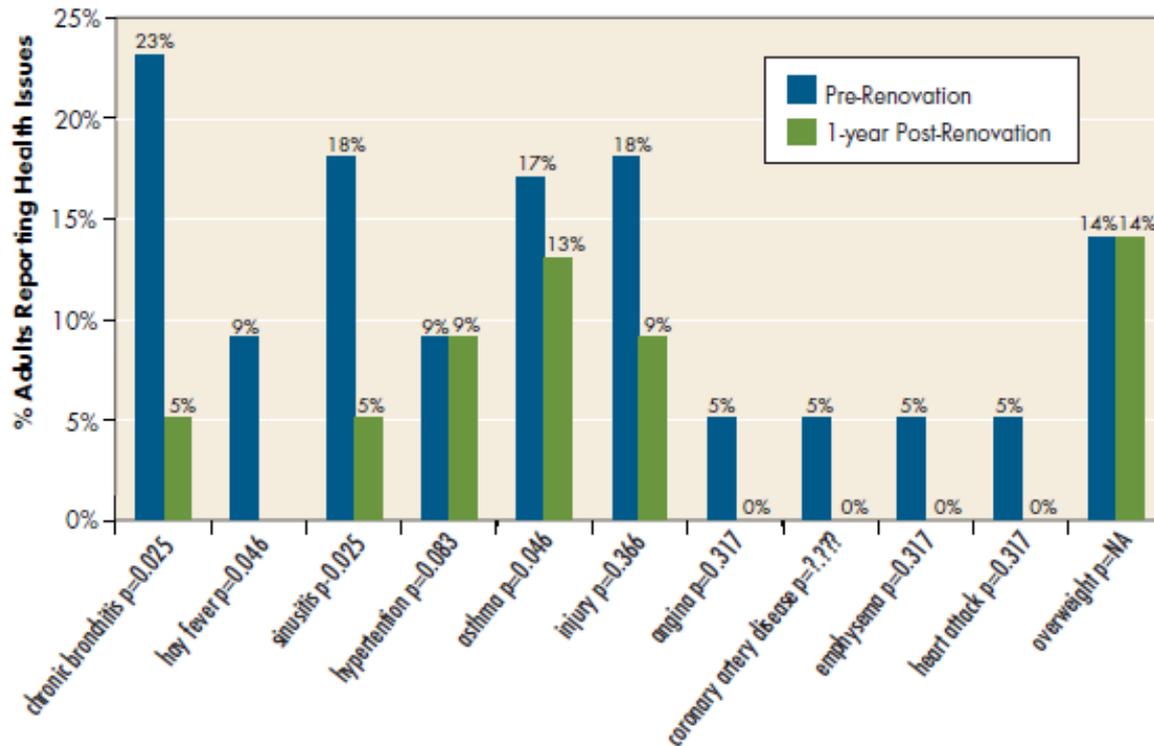
- Solid research linking energy to health
- Effects appear to be large
- Need to quantify money savings
- Also avoided fires, CO





Health

Figure 3-3. Changes in Reports of Specific Adult Health Issues (N=22):
Pre-Renovation (T0) versus One-Year Post-Renovation (T2)^a



^a McNemar Test; NA=Not applicable



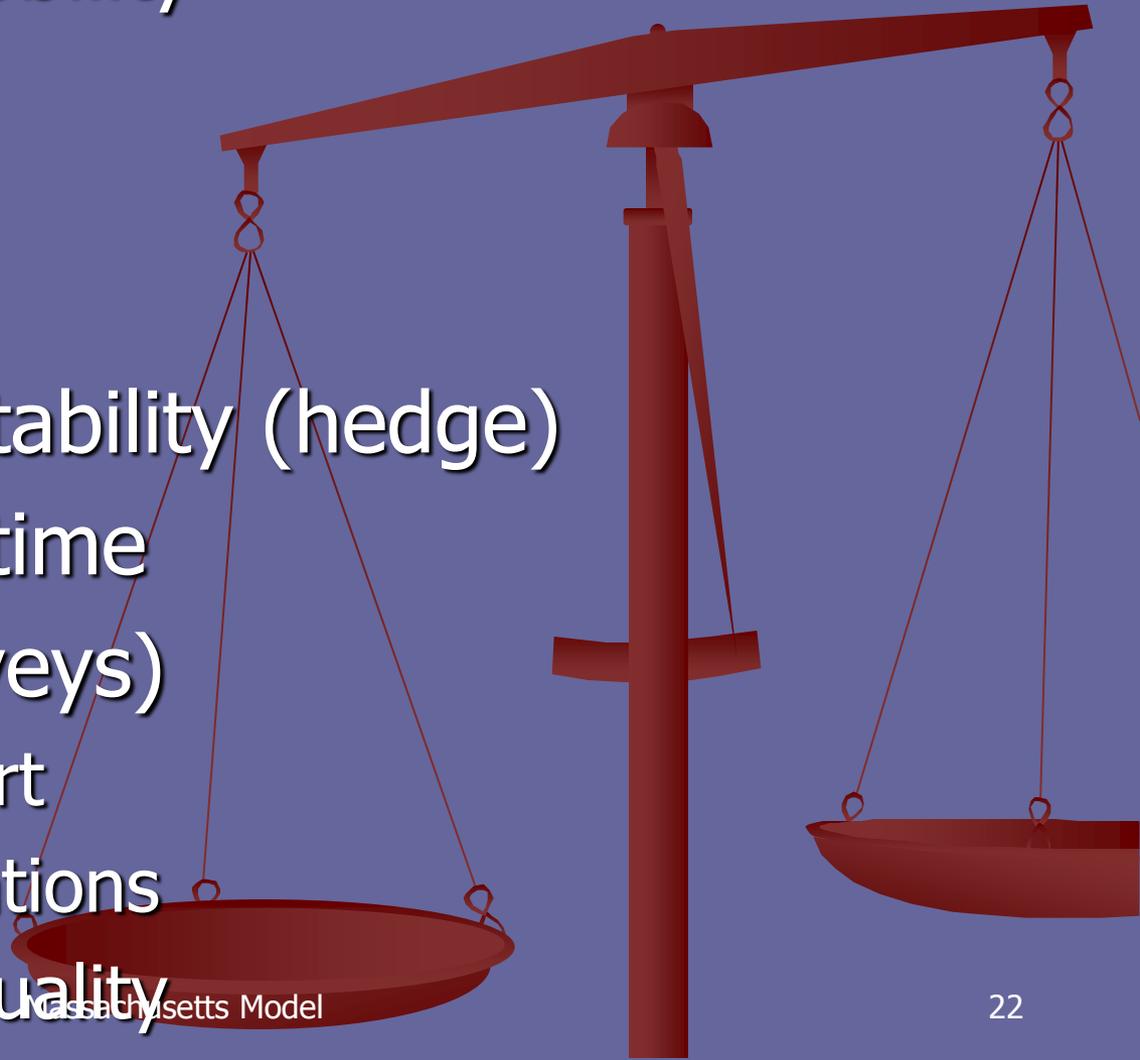
Participant: property value

- \$20.73 – \$133.27 in value increase per \$1 saved
- Based on statistical analysis



Participants: other

- Avoid forced mobility
 - Moving
 - Lost education
- Appliances
- Value of price stability (hedge)
- Save customer time
- Subjective (surveys)
 - Increase comfort
 - Reduce terminations
 - Improve light quality





Societal

- Largest benefits
 - Environmental
 - Economic development (jobs)
 - Taxes (e.g., fire, health, building inspections, homeless shelters, real estate tax base)
- Increased social equity





Societal: environmental





What is the value of carbon reduction?

- \$1.89 per short ton (RGGI)
- \$15.30+ from 2018 (federal cap-and-trade proj.)
- \$80 (from literature search)
- \$113 (implied from renewables requirement)





Economic development Mass.

Exhibit A - 1: Economic Development Impacts of Massachusetts Electric and Gas Energy Efficiency (EE) (Net Impact Multipliers per \$1 million)²

	Electric EE Net Impact	Gas EE Net Impact
MULTIPLIERS (per \$1 million, 2009 \$)		
Employment (job-years)	22.9	19.1
Earnings	\$1,126,900	\$885,200
Value-Added	\$1,478,300	\$891,500

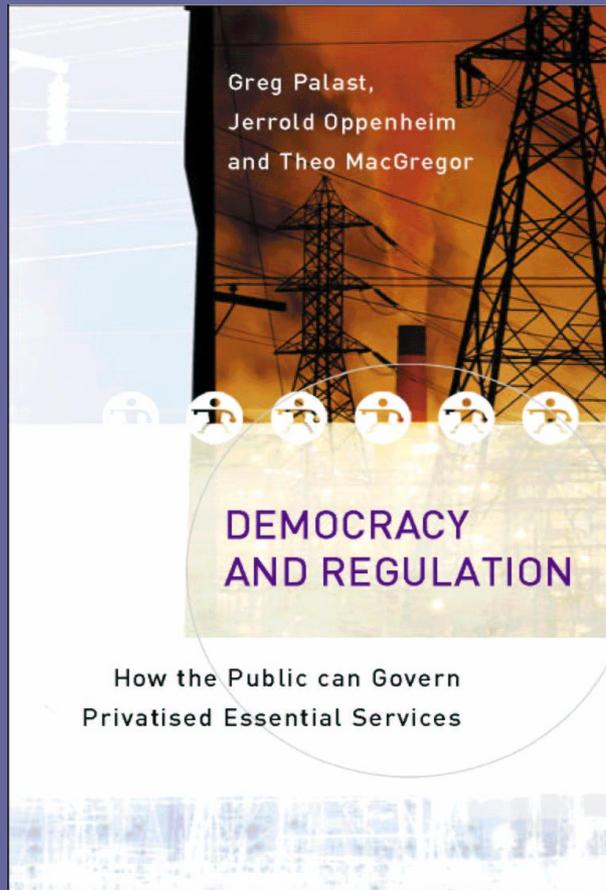


Economic development US

National multipliers			
For every \$1,000,000 in investment		Increased economic output	<i>Jobs</i>
ENERGY EFFICIENCY			
Net effect of investment		\$5,773,943	47
Net effect of bill savings		\$5,217,648	105
Effect of environmental improvement		\$5,743,952	36
Effect of non-energy benefits		\$17,437,091	150
TOTAL		\$34,172,634	337



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ABOUT THE SPEAKER

Theo MacGregor was director of the Electric Power Division of the Massachusetts Department of Public Utilities, where she oversaw all of the electric utilities' energy efficiency programs. She now runs MacGregor Energy Consultancy and provides expert analysis to state governments, attorneys general, utility companies, consumer advocates, and others.

Ms. MacGregor has published and lectured on U.S. utility regulation both nationally and internationally, including *Democracy And Regulation* with Jerrold Oppenheim and Greg Palast, published by Pluto Press (London) and winner of the ACLU Upton Sinclair Award. She has an MBA from Simmons School of Management in Boston.



ABOUT THE SPEAKER

Jerrold Oppenheim directed energy and utility litigation for the Attorneys General of New York and Massachusetts. He also directed consumer and utility legal assistance programs in New York, Boston, and Chicago.

With Theo MacGregor, he is author of "The Economics of Poverty: How Investments to Eliminate Poverty Benefit All Americans," many other studies, and, with Greg Palast, of Democracy and Regulation, published in February 2003 by Pluto Press, London, and winner of the Upton Sinclair "Freedom of Expression" award.

More information is available at

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