



# ***The City Energy Efficiency Scorecard & Other Tools for Cities***

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Conference on Energy Efficiency in Cities

Mexico City

# American Council for an Energy-Efficient Economy (ACEEE)

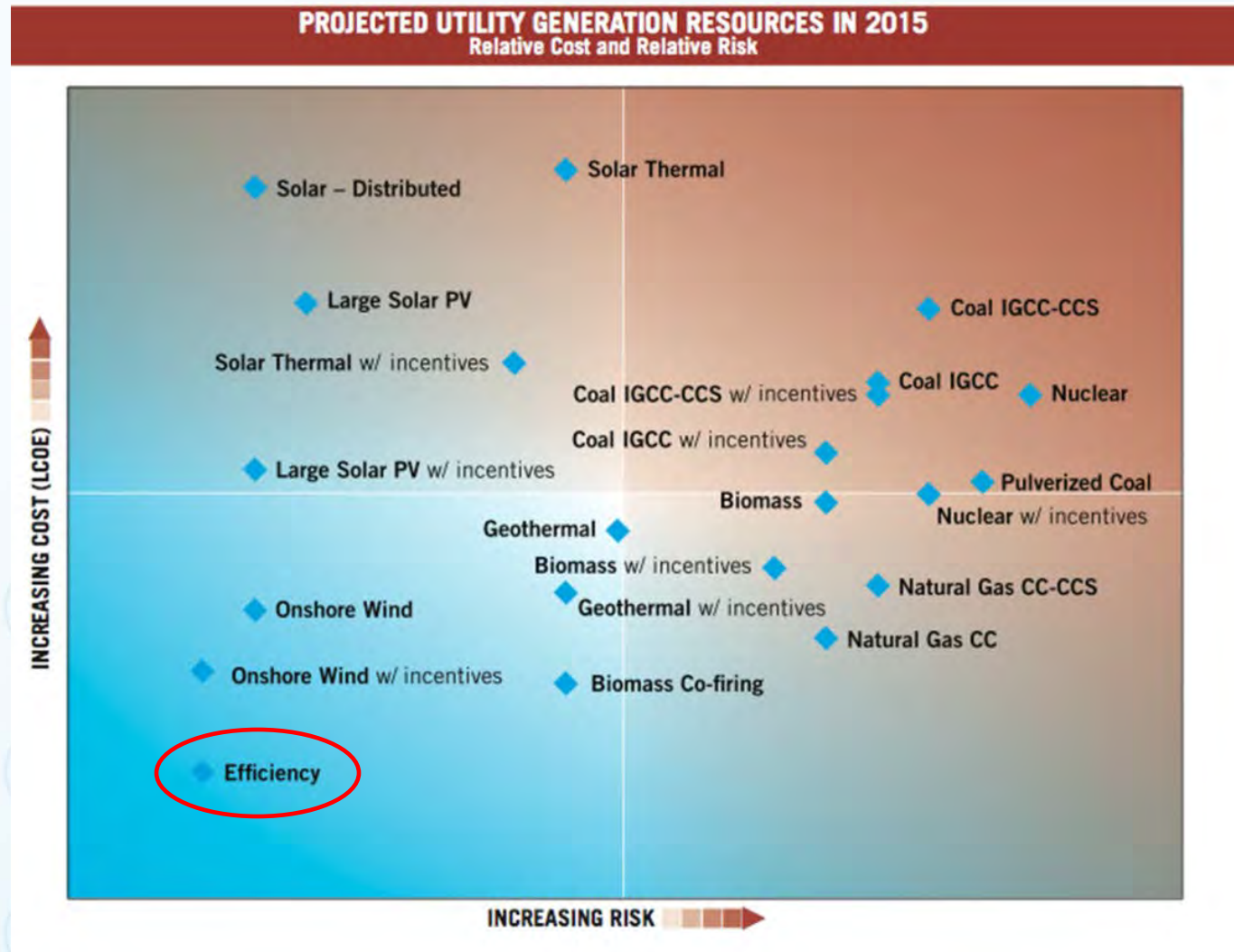
- 34 year old, nonprofit 501(c)(3) dedicated to advancing energy efficiency in the United States through research, policy, and technical assistance.
- Focus on end-use efficiency in Industry, Buildings and Equipment, Utilities & Transportation; Economic Analysis; Behavior; Finance.
- Policy Program working at National, State, and Local levels, some international work
- Local Policy work focused on:
  - Technical assistance to local governments and community organizations
  - Local Policy Toolkit, policy calculator, best practice research
  - Project on energy efficiency programs for multifamily housing
  - *City Energy Efficiency Scorecard* & related *Self-Scoring Tool* (today's topics)
  - [www.aceee.org/portal/local-policy](http://www.aceee.org/portal/local-policy)



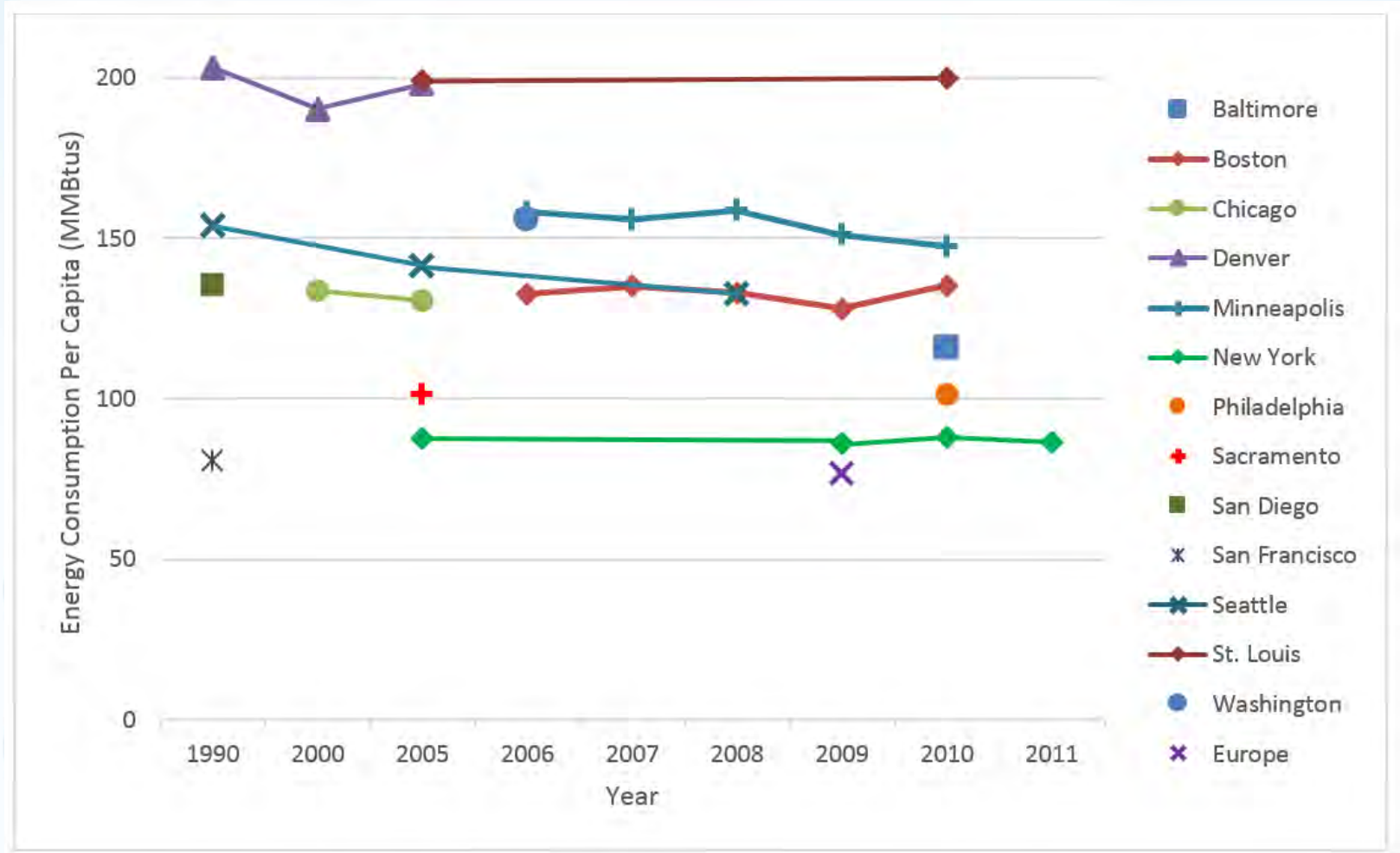
# Why Energy Efficiency?

## It's the Cheapest and Lowest Risk Energy Resource

*(And saves money, creates jobs, increases resilience, improves health and the environment...)*



# But City Energy Consumption is Flat\*





# Need to Expand the Policy Landscape of City Energy Efficiency

## Local Energy Efficiency Policy Opportunities by Sector and Strategy

Policy or Strategy Type		Economic Sector			
		<i>Buildings, Facilities &amp; Lighting</i>	<i>Land Use</i>	<i>Transportation</i>	<i>Utilities - Water and Energy</i>
<b>Public Investments &amp; Government Operations: “Leading By Example”</b>	<b>Government Operations &amp; Procurement</b>	<ul style="list-style-type: none"> <li>• benchmarking</li> <li>• retro-commissioning</li> <li>• scheduling and controls</li> </ul>	<ul style="list-style-type: none"> <li>• central workforce locations</li> <li>• flex-schedules &amp; tele-working</li> </ul>	<ul style="list-style-type: none"> <li>• fleet right-sizing &amp; maintenance</li> <li>• high efficiency fleet purchases</li> </ul>	<ul style="list-style-type: none"> <li>• performance monitoring (SCADA, etc.)</li> </ul>
	<b>Public Investments &amp; Infrastructure</b>	<ul style="list-style-type: none"> <li>• retrofits – equipment, insulation, roofs, lighting</li> <li>• green requirements for new public buildings</li> </ul>	<ul style="list-style-type: none"> <li>• “fix it first” approach to infrastructure</li> <li>• district energy and micro-grids</li> <li>• smart siting</li> <li>• complete streets</li> </ul>	<ul style="list-style-type: none"> <li>• mass transit service</li> <li>• car and bike sharing</li> <li>• parking</li> </ul>	<ul style="list-style-type: none"> <li>• combined heat and power</li> <li>• shade trees</li> <li>• green stormwater infrastructure</li> </ul>
<b>Private Actions &amp; Investments</b>	<b>Regulation &amp; Revenue</b>	<ul style="list-style-type: none"> <li>• building energy rating and disclosure</li> <li>• building permits &amp; codes</li> <li>• tax incentives</li> </ul>	<ul style="list-style-type: none"> <li>• smart zoning &amp; transit-oriented development (TOD)</li> <li>• affordable housing</li> <li>• property taxes</li> </ul>	<ul style="list-style-type: none"> <li>• road pricing</li> <li>• parking pricing</li> </ul>	<ul style="list-style-type: none"> <li>• efficiency as first resource</li> <li>• last mile/new connection policies</li> <li>• pricing or rate structures</li> </ul>
	<b>Incentives</b>	<ul style="list-style-type: none"> <li>• data access/ feedback on energy use</li> <li>• rebates</li> <li>• financing</li> </ul>	<ul style="list-style-type: none"> <li>• density bonuses, expedited permitting</li> <li>• adaptive reuse</li> </ul>	<ul style="list-style-type: none"> <li>• mode shift programs</li> <li>• pay-as-you-drive insurance</li> </ul>	<ul style="list-style-type: none"> <li>• customer efficiency incentives, rebate &amp; financing programs</li> </ul>
	<b>Mandates</b>	<ul style="list-style-type: none"> <li>• energy upgrade requirements</li> </ul>	<ul style="list-style-type: none"> <li>• growth boundaries</li> </ul>	<ul style="list-style-type: none"> <li>• speed limits</li> </ul>	<ul style="list-style-type: none"> <li>• energy and water saving targets</li> </ul>

# City Scorecard Project Goals

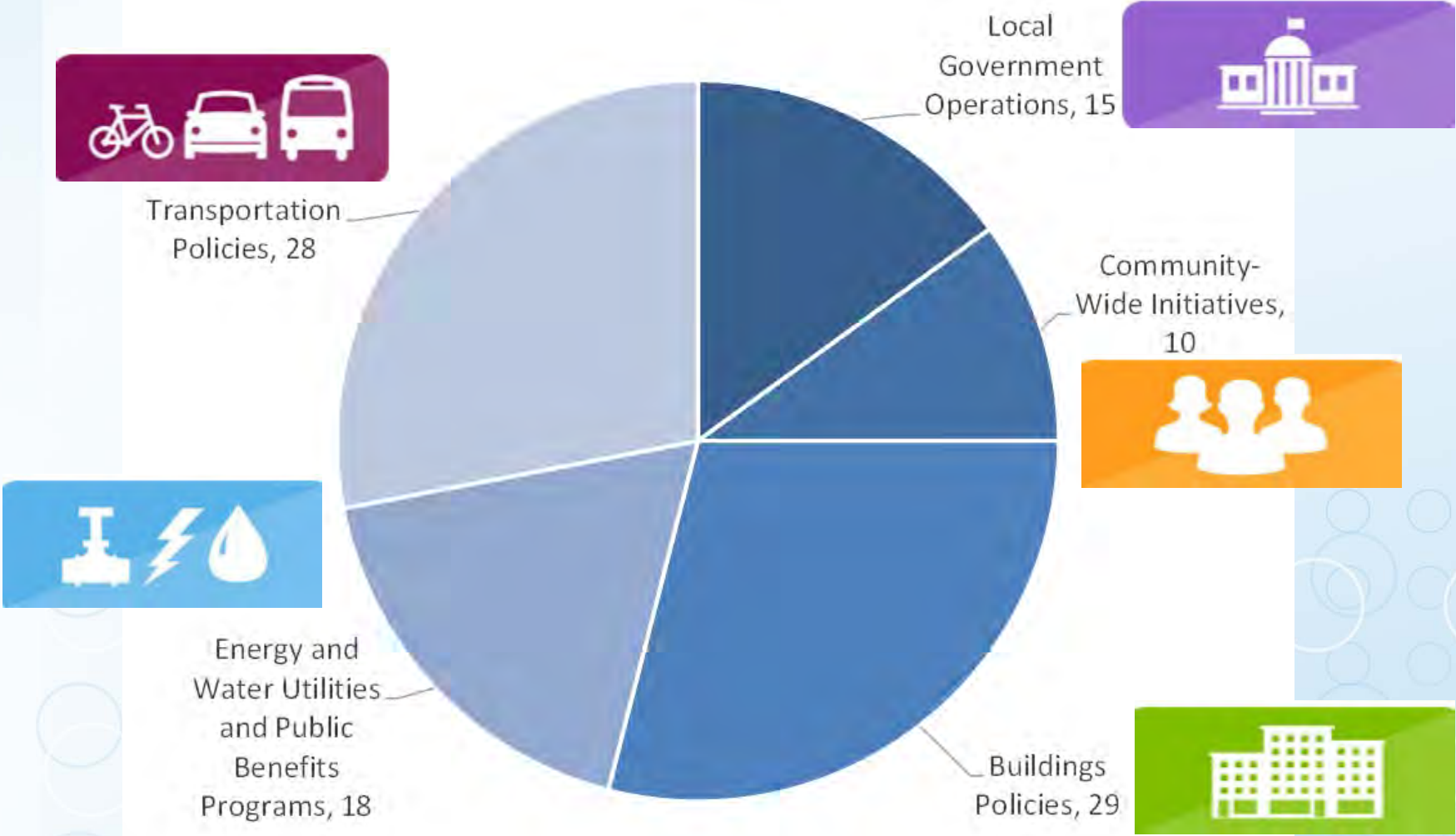
## HOW IS YOUR CITY SAVING ENERGY?

A new report from the American Council for an Energy-Efficient Economy ranks America's 34 largest cities on what they are doing to save energy and costs in five key areas. Click on the map to see how cities scored.



1. Compare large U.S. cities exclusively on efficiency – identifying leaders and where improvement is needed
2. Focus on policies – highlight important *actions* that can be taken by cities
3. Comprehensive roadmap for cities – examples and best practices

# Policy Areas and Points (100 total)





Local Government

# Local Government Operations Metrics

Policy Area and Subcategories	Maximum Score	Percentage of Total Points
Local Government Operations	15	15%
Local Government Energy Efficiency Goals	2	2%
Energy Strategy Implementation	4	4%
<i>On track to meet targets</i>	1	
<i>Dedicated funding or integrated into capital planning</i>	0.5	
<i>Public outreach</i>	0.5	
<i>Annual public reporting</i>	0.5	
<i>Third-party evaluation, measurement, and verification (EM&amp;V)</i>	0.5	
<i>Dedicated staff</i>	0.5	
<i>Departmental/staff incentives</i>	0.5	
Procurement and Construction Policies	4	4%
<i>Fuel efficiency requirement</i>	1	
<i>Right-sizing and anti-idling policies</i>	0.5	
<i>Electric vehicle charging stations</i>	0.5	
<i>Outdoor lighting standards</i>	0.75	
<i>Scheduled lighting</i>	0.25	
<i>Above-code requirements for public buildings</i>	0.5	
<i>Energy-efficient procurement policy</i>	0.5	
Asset Management	5	5%
<i>Building benchmarking</i>	1	
<i>Comprehensive retrofit strategy</i>	1	
<i>Fix-it-first or lifecycle cost policy</i>	1	
<i>Allocation to maintenance in capital budget</i>	1	
<i>Availability of teleworking or flex schedules for employees</i>	0.5	
<i>Transit benefits for employees</i>	0.5	





Buildings

# Buildings Metrics

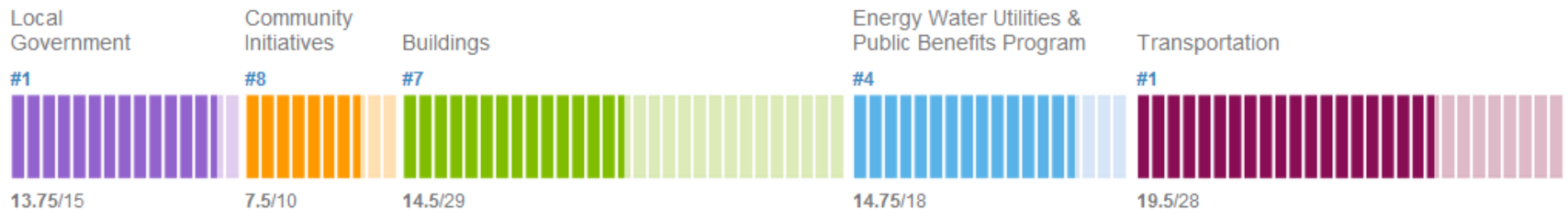
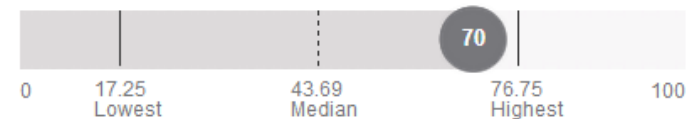
<b>Buildings Policies</b>	<b>29</b>	<b>29%</b>
Building Energy Code Stringency	6	6%
<i>Commercial</i>	3	
<i>Residential</i>	3	
Building Energy Code Implementation	6	6%
<i>Spending on code compliance</i>	2	
<i>Third-party code compliance strategies</i>	2	
<i>Upfront code support</i>	2	
Requirements and Incentives for Efficient Buildings	9	9%
<i>Above code requirements for certain private buildings</i>	2	
<i>Energy audit requirements</i>	1	
<i>Energy retrofit requirements</i>	2	
<i>Incentives or financing programs</i>	3	
<i>Building energy savings goals</i>	1	
Benchmarking, Rating, and Disclosure	6	6%
<i>Commercial</i>	3	
<i>Residential</i>	3	
Comprehensive Efficiency Services	2	2%



# #2: Portland

## PORTLAND

Rank #2 TOTAL SCORE: 70



### CITY STATS

- City pop.: 603,106
- Land area: 133 mi<sup>2</sup>
- Metro pop.: 2,289,800
- Utilities: PGE (elec), NW Natural (gas)
- Non-car commuters: 33%

### BEST PRACTICES

- On track to meet city's Climate Action Plan goals and has dedicated funding for energy efficiency.
- Policies in place to encourage compact development, reduce vehicle trips, and improve zoning and land use planning.
- Established energy-saving goals and strong policies for government operations, public buildings and vehicles.

### AREAS FOR IMPROVEMENT

- Require commercial and residential buildings to rate and report energy use.
- Expand the use of combined heat and power.

# Overall Findings

- The top scoring cities have comprehensive efficiency strategies, and broad-ranging policies or programs, often a history of implementing efficiency.
- All cities, even the highest scorers, have room for improvement. Only 11 cities scored more than half of the possible points.



# Local Energy Efficiency Self-Scoring Tool

- User-oriented, spreadsheet tool for scoring any local gov't on *City Scorecard* metrics
- Users may be included in ACEEE *Local Policy Database* and may be included in *2015 City Scorecard*.



## Local Energy Efficiency Self-Scoring Tool, Version 1.0 Beta

Last Update: 10/31/13

**Introduction:** This tool is the result of ACEEE's efforts to translate the metrics of the *City Energy Eff* and medium-sized localities. As users work through the sections of the tool, they will see how their policies. This allows users to not only benchmark current energy efficiency efforts, but also continue tool as communities develop more comprehensive energy plans. This application also provides some inform energy policy decisions and prioritize future investments. Furthermore, the *Self-Scoring Tool* of other small and medium sized communities. These peer community comparisons will put scores innovative policies and best practices adopted by small- to medium-sized communities. Additional inputs to recommend programs and policies that would improve a community's energy efficiency si Calculator (LEEC-C) in conjunction with the *Self-Scoring Tool* will allow users to further understand policies and programs.

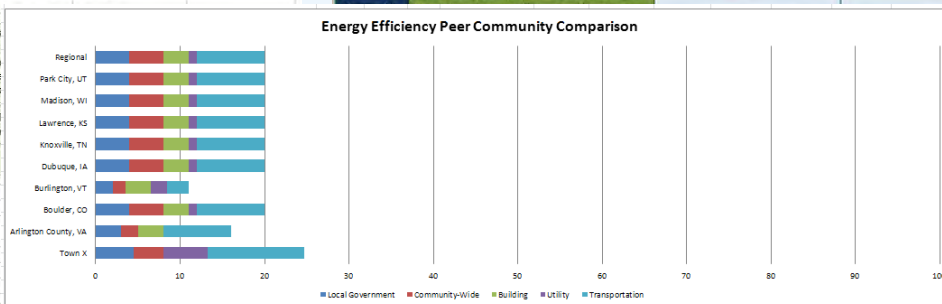
Locality Name		
Locality Population	Locality Households	State Population
<a href="#">United States Census</a>	<a href="#">United States Census</a>	<a href="#">United States Census</a>

**Instructions:** Before using the *Self-Scoring Tool*, users should reference the *Local Energy Efficiency S* policy/scoring-tool.

The locality and state information requested on this worksheet should be completed before users p calculations. Beyond the Introduction, the *Self-Scoring Tool* has seven other tabs.  
**-Policy Area Tabs:** Five tabs correspond to the policy areas upon which communities will be Wide Initiatives, Buildings Policies, Utility Policies, and Transportation Policies. Users obtain  
**-Analysis Tabs:** Two tabs provide analysis of a community's scores based upon questions u a community's scores and recommends programs and policies that would improve a commi specific metrics and benchmarks them against other peer community scores.

These step-by-step instructions provide a quick snapshot for how to use the *Local Energy Efficiency*

Community-Wide Initiatives					
Policy Types	Score				
Getting Started on Community-Wide Energy Efficiency	0 (out of 3.5)				
Informing the Community	0 (out of 0.5)				
Comprehensive Community-Wide Energy Management Strategy	0 (out of 6)				
Program and Policy Metrics					
Energy Efficiency Targets					
Metric	Question	Answer	Scoring Criteria	Score	Recommended Source

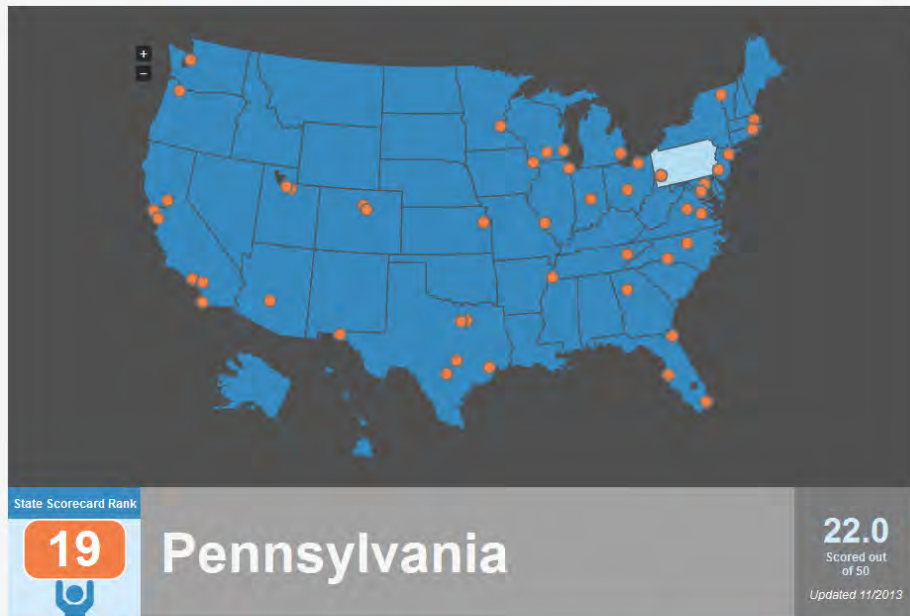


Scoring Criteria	Score	Recommended Source
		Locality Research
		Locality Research
		Locality Research

	Policy Area	Score	Analysis of Results	
			Policy Analysis	Peer City with Best Practice
Most Room for Improvement	Buildings Policies	0.00	Within Buildings Policies, the city scored lowest in Improving Access to Energy Usage in Buildings. Programs and policy types to improve your score include the following: Upfront Support for Energy Code Compliance, Energy Audit Requirements, Commercial Building Benchmarking and Disclosure Policies, and Residential Building Benchmarking and Disclosure Policies	TBD
Best Performing	Community-Wide Initiatives	3.50	Within Community-Wide Initiatives, the city scored highest in Informing the Community. This high score stems from having several of the following policies put in place: Annual Progress Reporting	TBD
Explore Opportunities for Different Sectors	Local Government Operations	4.50	Within Local Government Operations, the city's worst scoring policy step was Comprehensive Energy Management Strategy for Government Operations	TBD



# ACEEE State and Local Policy Database



State Government | Buildings | CHP | Utilities | Transportation | Appliance Standards

★ State Government Score: 4.5 out of 7

State Government Summary List All ↗

The state invests in efficiency projects through its Alternative Energy Investment Fund, and offers several financing options for efficiency projects. The state government leads by example by setting energy requirements for public buildings and encouraging the use of energy savings performance contracts.

Financial Incentives List All ↗



Local Government Operations | Community-Wide Initiatives | Buildings Policies | Energy & Water Utilities | Transportation

★ Local Government Operations Score: 13 out of 15 points

Local Government Summary List All ↗

Annual Departmental Climate Action Plans detail the different strategies taken by city departments as they work toward San Francisco's climate and energy goals. These plans track vehicle fuel usage, building energy usage, water usage, and employee behavior. The San Francisco Department of the Environment (SF Environment) largely coordinates city departments through the climate action planning process.

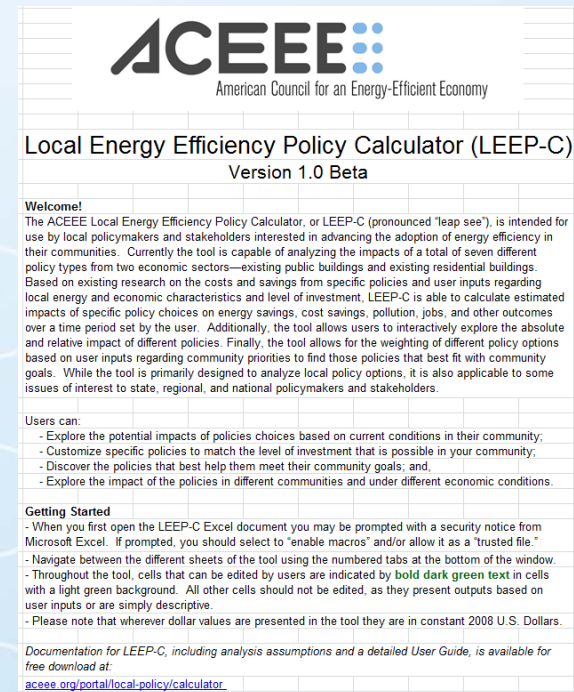
# How the *City Scorecard* tools are used by cities

- Benchmark city's current efficiency policies and compare to peers
- Build awareness of options with stakeholders
- Develop and prioritize actions for climate/energy/sustainability plan
- Track progress toward implementation of plan; re-score a year or two later
- Recognition of leadership or progress



# ACEEE Local Energy Efficiency Policy Calculator (LEEP-C)

- User-oriented, decision support tool
- Provides first-cut estimates of policy and program impacts: energy savings, costs, GHG, criteria pollutants, jobs.
- Inputs customizable to local energy, policy, and economic conditions
- Current public beta version includes seven policies in two sectors: public buildings, residential buildings
- [aceee.org/portal/local-policy/calculator](http://aceee.org/portal/local-policy/calculator)



The screenshot shows the title page of the ACEEE Local Energy Efficiency Policy Calculator (LEEP-C) Version 1.0 Beta. The page includes the ACEEE logo and the text "American Council for an Energy-Efficient Economy". Below the title, there is a "Welcome!" section followed by a detailed introduction of the tool. The introduction states that the tool is intended for use by local policymakers and stakeholders interested in advancing the adoption of energy efficiency in their communities. It is currently capable of analyzing the impacts of a total of seven different policy types from two economic sectors—existing public buildings and existing residential buildings. Based on existing research on the costs and savings from specific policies and user inputs regarding local energy and economic characteristics and level of investment, LEEP-C is able to calculate estimated impacts of specific policy choices on energy savings, cost savings, pollution, jobs, and other outcomes over a time period set by the user. Additionally, the tool allows users to interactively explore the absolute and relative impact of different policies. Finally, the tool allows for the weighting of different policy options based on user inputs regarding community priorities to find those policies that best fit with community goals. While the tool is primarily designed to analyze local policy options, it is also applicable to some issues of interest to state, regional, and national policymakers and stakeholders.

Users can:

- Explore the potential impacts of policies choices based on current conditions in their community;
- Customize specific policies to match the level of investment that is possible in your community;
- Discover the policies that best help them meet their community goals; and,
- Explore the impact of the policies in different communities and under different economic conditions.

Getting Started

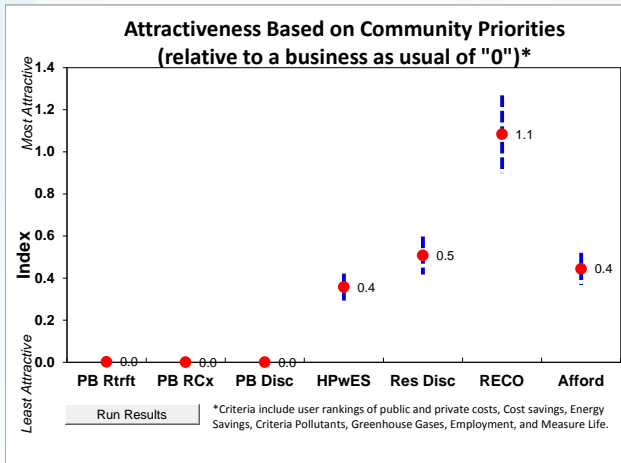
- When you first open the LEEP-C Excel document you may be prompted with a security notice from Microsoft Excel. If prompted, you should select to "enable macros" and/or allow it as a "trusted file."
- Navigate between the different sheets of the tool using the numbered tabs at the bottom of the window.
- Throughout the tool, cells that can be edited by users are indicated by **bold dark green text** in cells with a light green background. All other cells should not be edited, as they present outputs based on user inputs or are simply descriptive.
- Please note that wherever dollar values are presented in the tool they are in constant 2008 U.S. Dollars.

Documentation for LEEP-C, including analysis assumptions and a detailed User Guide, is available for free download at: [aceee.org/portal/local-policy/calculator](http://aceee.org/portal/local-policy/calculator).

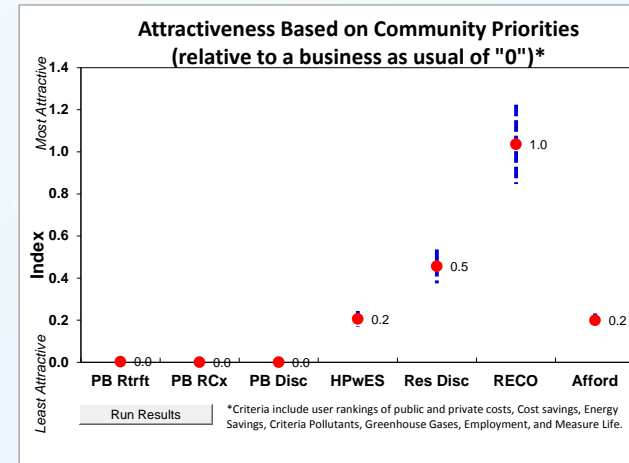


# Attractiveness Compared, prioritizing...

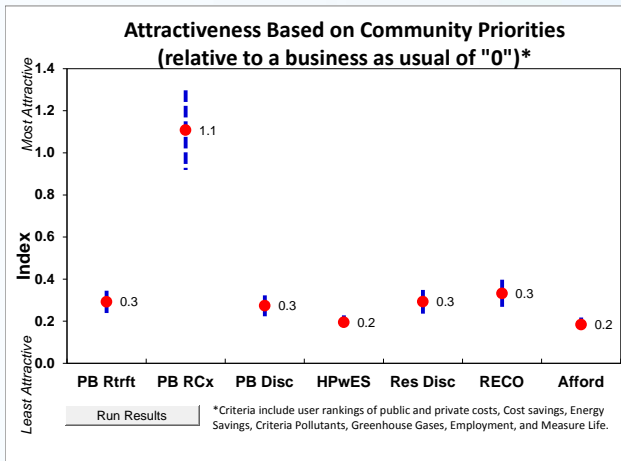
## Total Energy Savings



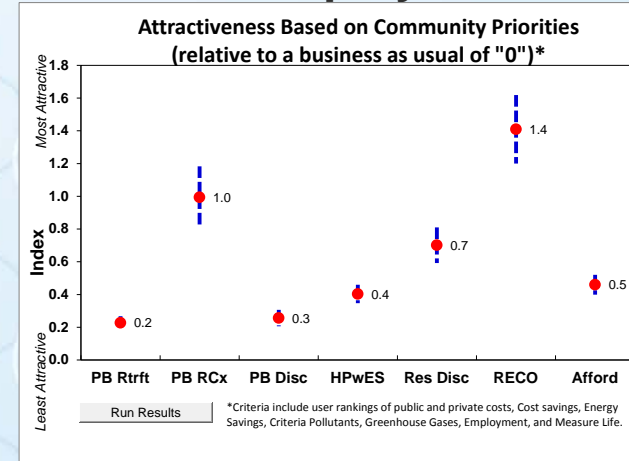
## Total Employment



## Energy Savings/\$



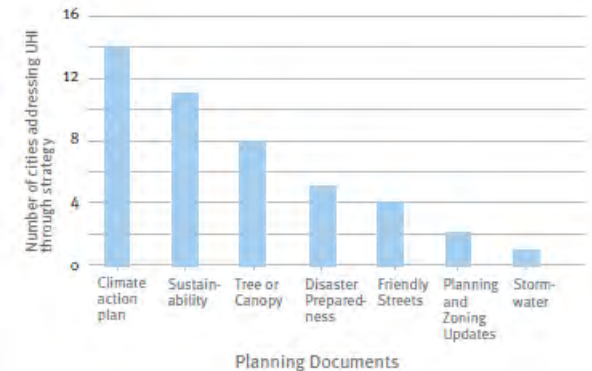
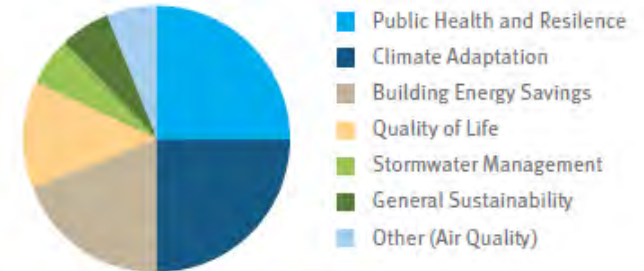
## Energy Savings/\$ & Total Employment



# Released Today: *Cool Policies for Cool Cities*

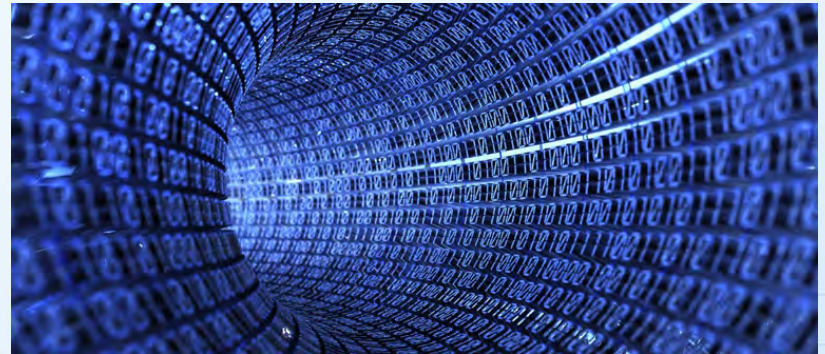
- How cities think about, plan for, and mitigate the urban heat island (UHI) effect
- Survey of 26 US & Canadian cities
- Cities are motivated by public health, climate resiliency, building energy savings
- Policies and programs are embedded in many planning efforts and across departments

Primary motivations for UHI mitigation

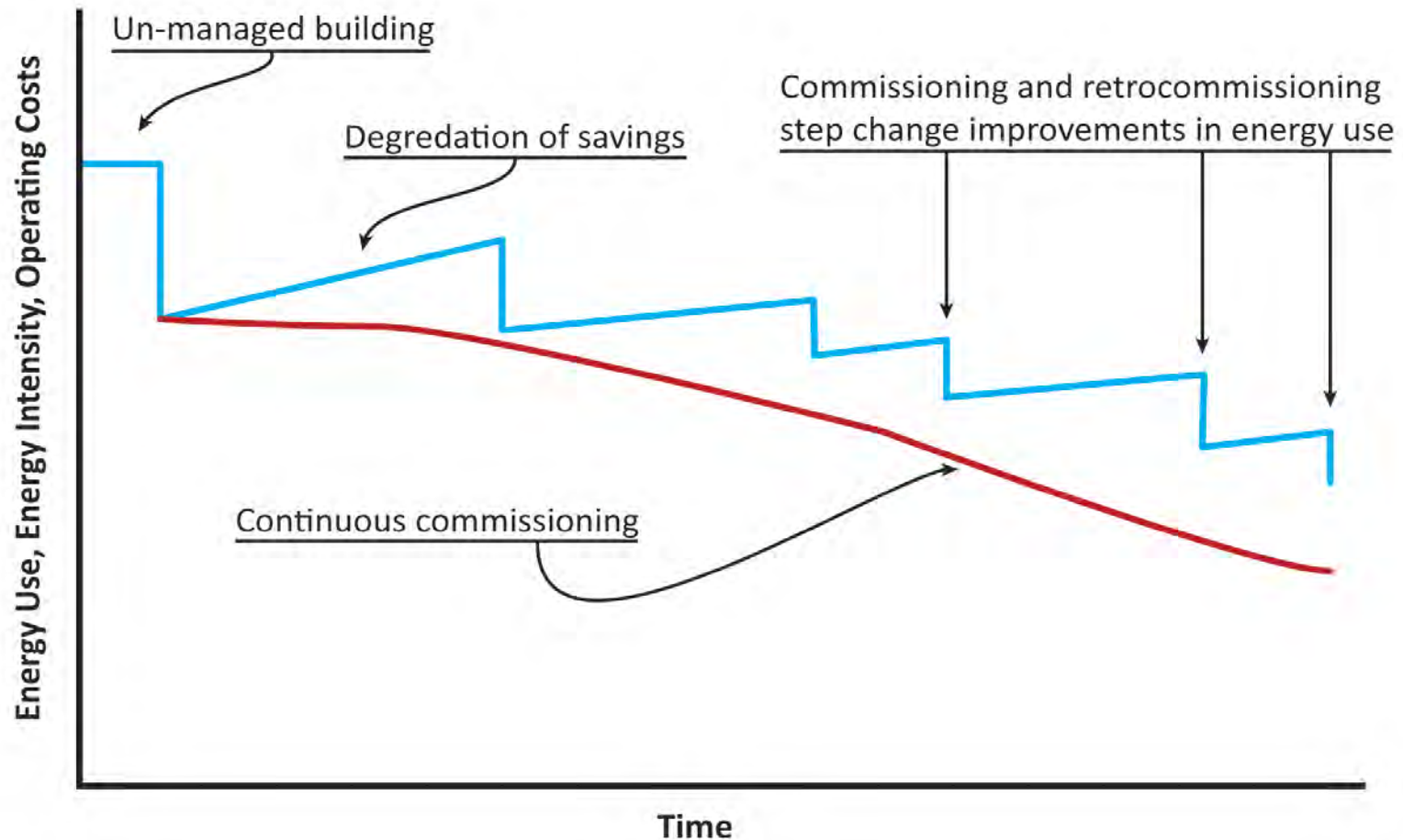


# What is *Intelligent Efficiency*?

- Energy savings enabled by
  - information & communication technologies (ICT)
  - access to real-time information
- Technology/behavior continuum
- Saves energy through:
  - Optimizing systems – parts working better as a whole
  - Identifying errors early & eliminating degradation of savings
  - Substitution – technological evolution



# Example: Continuous commissioning





# U.S. Policy Approach to Efficiency in Buildings & Industry

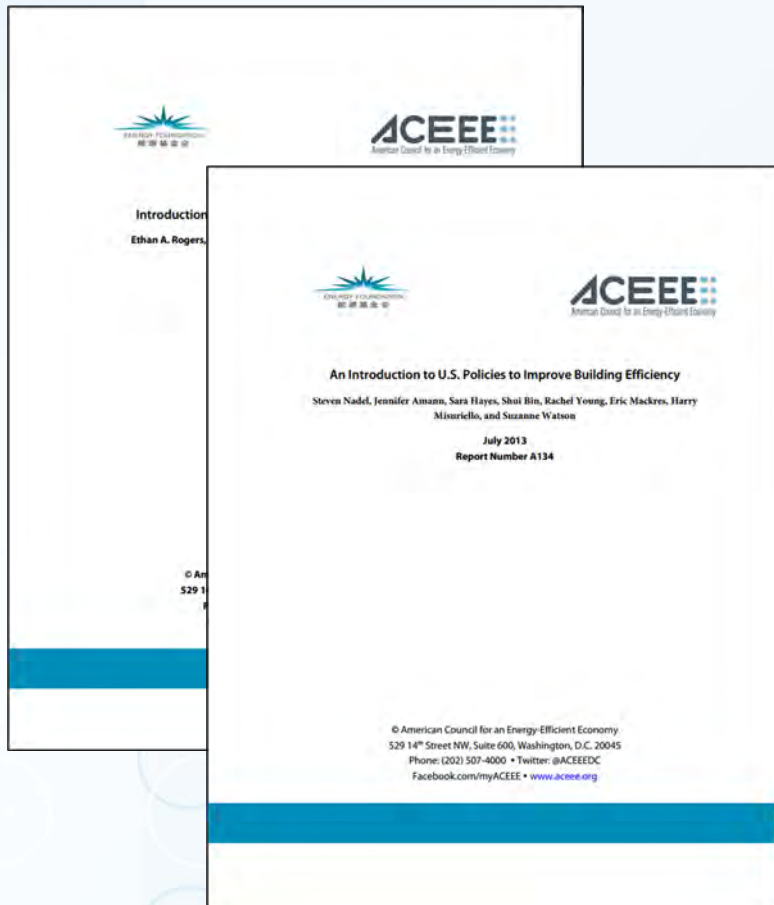


Table 1. Summary of Major U.S. Federal Buildings Efficiency Programs and Policies

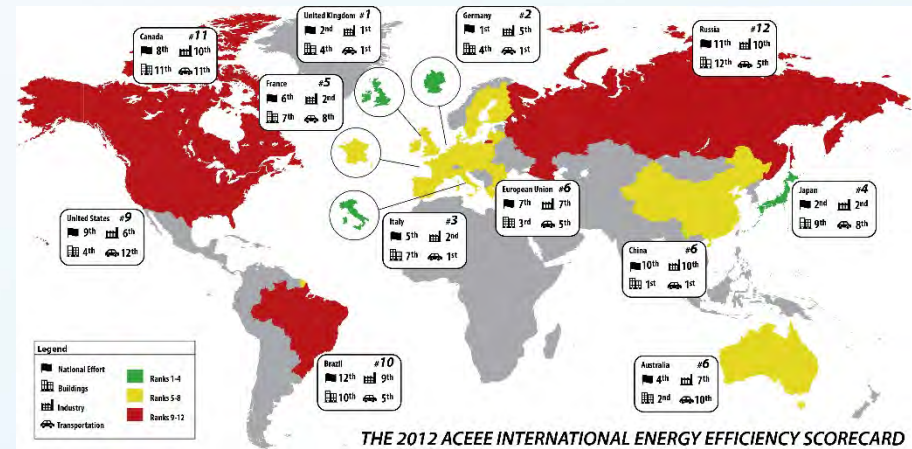
Program/Policy	Start Year	Who Administers	Mandatory/Voluntary	Subsidies Included?	Budget in Most Recent Year (\$million)	Energy Savings in Most Recent Year*
1. Buildings Technology Program	1977	U.S. Department of Energy	Voluntary	Sometimes	\$219 million in fiscal year 2012	Not available
2. State Energy Program (SEP)	1975	U.S. Department of Energy	Voluntary	Generally not	Has averaged ~\$41.5 million; additional \$3.1 billion provided by ARRA for 2009-2012	In 2005 estimated annual energy savings of 47.6 million MBtu and \$334 million
3. Energy Efficiency and Conservation Block Grants (EECBG)	2009	U.S. Department of Energy	Voluntary	Sometimes	ARRA provided \$3.2 billion for 2009-2012.	Not yet available
4. Weatherization Assistance Program (WAP)	1976	U.S. Department of Energy	Voluntary	Yes	Average of \$181million; ARRA provided \$5 billion for 2009-2012.	The average participating household saved 30.5 million Btu (32.2 GJ) of natural gas.
5. Federal Energy Management Program (FEMP)	1978	U.S. Department of Energy	Mandatory	Yes	\$30.0 million in fiscal year 2012	ESPC projects reduced annual energy consumption by 32.8 trillion Btu and \$13.1 billion.
6. U.S. Department of Housing and Urban	1974	U.S. Department of Housing and Urban	Voluntary	Rarely	Program specific budgets; energy	Not available

# 2014 *International* Energy Efficiency Scorecard

Compares energy efficiency policies and performance in 16 of the world's largest economies. First edition released in 2012.

## Basis for Ranking and Scores:

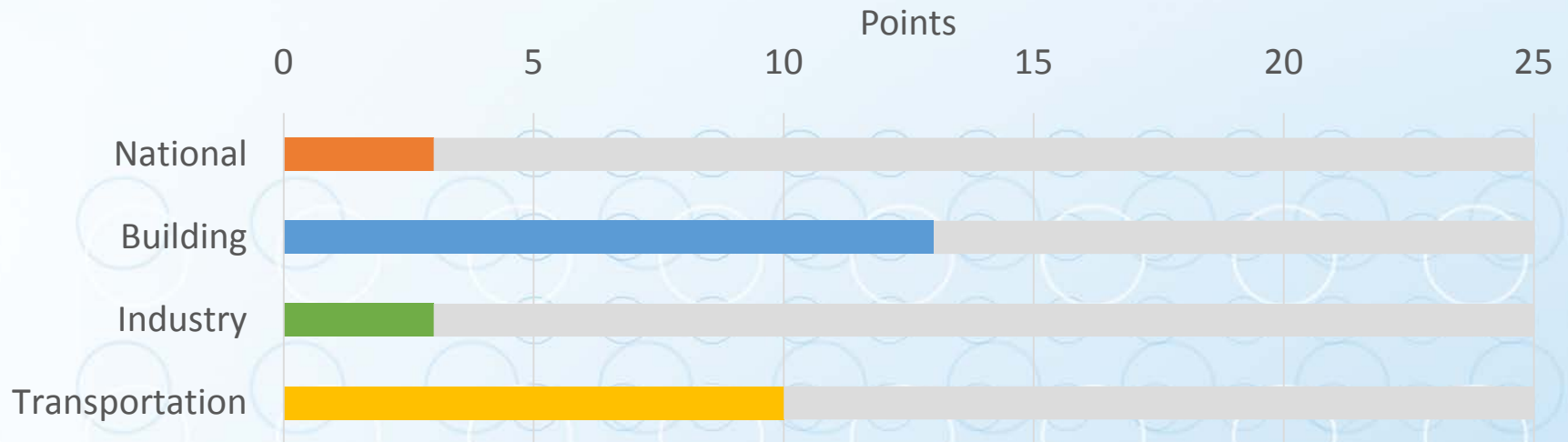
- 31 metrics measuring energy efficiency such as:
  - Change in national energy intensity;
  - Energy efficiency spending;
  - Building codes;
  - Energy intensity of freight transport; and
  - Mandates for energy plant managers and energy audits.



- 4 major categories representing energy consumption:
  - National/Cross-Cutting
  - Buildings
  - Industry
  - Transportation
- 100 possible points (25 points for each category)

# Results for Mexico\*

- Newly added to the Scorecard (with India, South Korea, and Spain).
- Scored 15<sup>th</sup> out of 16 countries evaluated, ahead of Brazil.





## ACEEE Summer Study on EE in Buildings

August 17 – 22, 2014 • Asilomar Conf. Center • Pacific Grove, CA

### Who Should Attend

- Policymakers and local, state, and federal agency personnel
- utility staff
- Architects, builders, and engineers
- financial and insurance professionals involved with buildings
- clean-tech investors
- building products, equipment, and appliance manufacturers
- building owners and operators
- energy researchers, NGOs, consultants, behavioral scientists, and energy efficiency professionals



**#SummerStudy**

## ACEEE Intelligent Efficiency Conference

November 16 - 18, 2014 • Hyatt Regency • San Francisco, CA

### Who Should Attend

- Policymakers and local, state, and federal agency personnel
- Energy efficiency program developers and administrators
- Service providers
- Investors and entrepreneurs
- Hardware and software developers
- ICT solution providers
- Building automation providers
- Smart manufacturing and smart transportation leaders



**#ACEEEIE**

[www.aceee.org/conferences](http://www.aceee.org/conferences)



# Questions?

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Reports and tools available at

[aceee.org/portal/local-policy/](http://aceee.org/portal/local-policy/)

