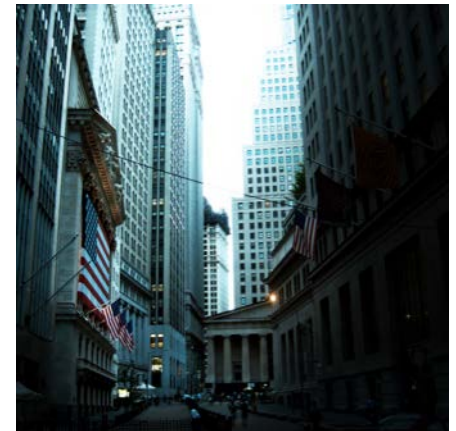




*Existing Building
Energy Performance:
Selected Policies and
Programs*



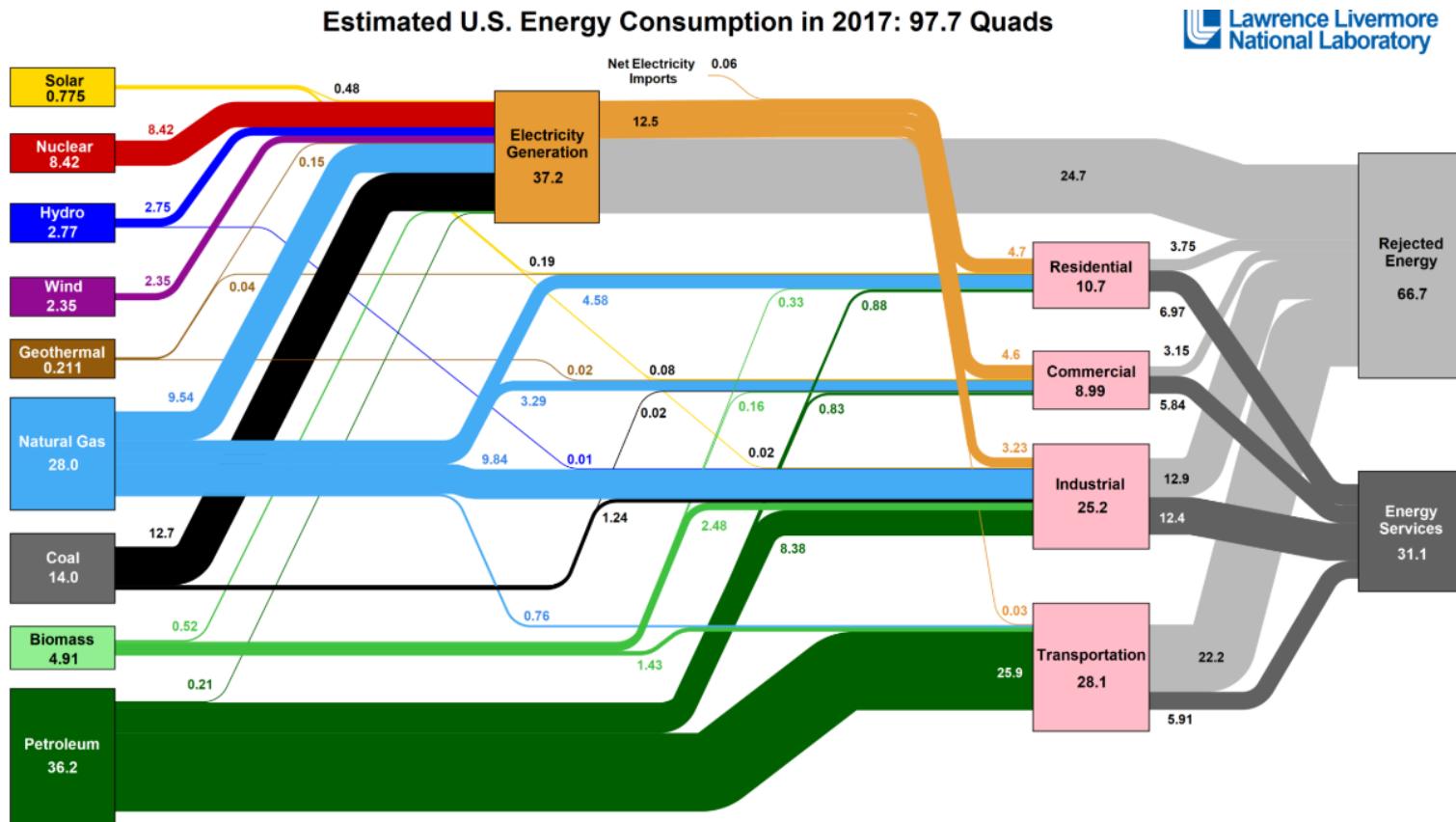
*National Association of
State Energy Officials*

Rodney Sobin
Senior Program Director
National Association of State Energy Officials

ACPAC
Washington, DC March 18, 2019

+ Existing Building Energy Performance

- Residential and commercial sectors accounted for 39% (38 Q) of U.S. energy use in 2017; almost all in buildings (EIA).



Note that one should consider rejected energy associated with thermal electricity generation.

+ Existing Building Energy Performance

- Buildings are very long lived assets; 50-100+ years.
 - Stock turnover is slow.
 - Need to address existing buildings if want to make significant overall improvements in energy performance.
 - Cost, efficiency, peak reduction/load management, resilience, environmental/emissions...
- Building energy codes generally govern new construction and major alterations.
- Various policies **encourage** or **support** improving energy performance of existing buildings but few **mandate** it.
- Some policies are a bit **in between** with mandatory aspects.



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■ *Encourage/Support.*

■ Financial programs.

- Loan funds, green or resilience banks, property assessed clean energy (PACE) finance, on-bill finance, energy savings performance contracts (ESPC),...

- Utility energy efficiency and demand response incentives (e.g., rebates, subsidized energy audits/assessments).

- Tax incentives.

- Utility rate design and grid market mechanisms (e.g., demand and time-of-use rate structure, demand response payments, capacity markets).

- Voluntary programs (LEED, ENERGYSTAR, 2030 Districts, etc.)

- Green or high-performance energy-aligned leasing.



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- *“In between.”*
 - Building energy codes apply to major alterations.
 - They don’t require upgrades or particular performance absent a major renovation.
 - Appliance/equipment energy efficiency standards.
 - Applies to replaced equipment but doesn’t compel replacement or upgrade of existing equipment.
 - Building labeling—can be voluntary or mandated but doesn’t require upgrades/improvements.
 - Benchmarking and disclosure—mandated, some starting to address O&M and upgrades.
- Also, public buildings lead-by-example policies:
 - Law or executive orders—can have hard goals or soft targets for building performance, upgrades, ESPC.

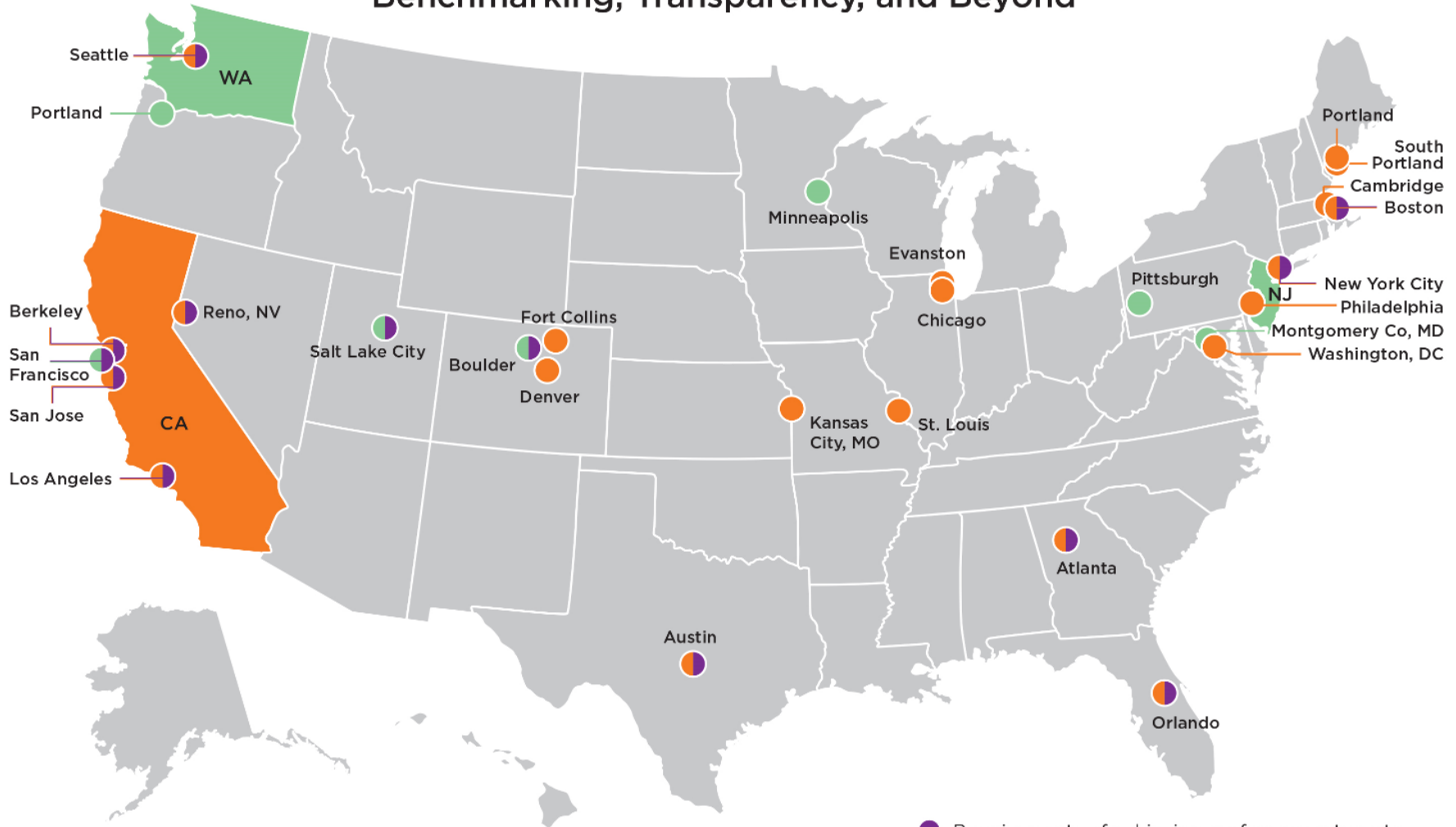


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- A bit on labeling:
 - NYC: Large buildings to have A-F grade posted in 2020.
 - Portland, OR time-of-sale labeling (Jan 2018); Home Energy Score in real estate MLS; data suggest upgrades occurring.
 - Oregon voluntary labelling based on HES.
 - Berkeley, CA time-of-sale labeling ordinance.
 - MA: Bill to phase in time-of-sale building energy scorecard
 - Home Energy Labeling Info eXchange (HELIX): NASEO, NEEP, N.Eng.+NY—energy info (HES, HERS) for MLS.
 - Denver, Ft. Collins—among other efforts.



U.S. City, County, and State Policies for Existing Buildings: Benchmarking, Transparency, and Beyond



- Requirements of achieving performance targets or completing additional actions
- Benchmarking policy for public, commercial, and multifamily buildings adopted
- Benchmarking policy for public and commercial buildings adopted



+ Existing Building Energy Performance

- *Mandatory*—Benchmarking complements.
 - New York City Local Laws.
 - LL 87: Energy audits and retrocommissioning (RCx) every 10 yr. for (residential and commercial) buildings >50k sf.
 - some exemptions if recently met certain ENERGYSTAR or LEED criteria.
 - LL 88 and 134: One-time lighting upgrade to current code by Jan. 2025 for buildings >25k sf.
 - LL 88 and 132: Non-residential buildings >25k sf to install electrical sub-meters by Jan. 2025 and provide monthly energy statements for tenant spaces >5k sf.

+ Existing Building Energy Performance

- *Mandatory*—Benchmarking complements (continued).
 - Boulder, CO Building Performance Ordinance.
 - Periodic energy assessments and RCx.
 - Requires implementation of cost-effective (≤ 2 yr. payback) measures.
 - One-time lighting upgrade to latest code.
 - Austin, TX (Austin Energy customers within city limits).
 - Home energy audit disclosure before sale (if home ≥ 10 yr. old).
 - Multifamily buildings: Periodic energy audits, requirement for “high energy use properties” ($>150\%$ of Austin avg.) to reduce energy use 20%.
 - Commercial buildings energy audit and disclosure requirements.

+ Existing Building Energy Performance

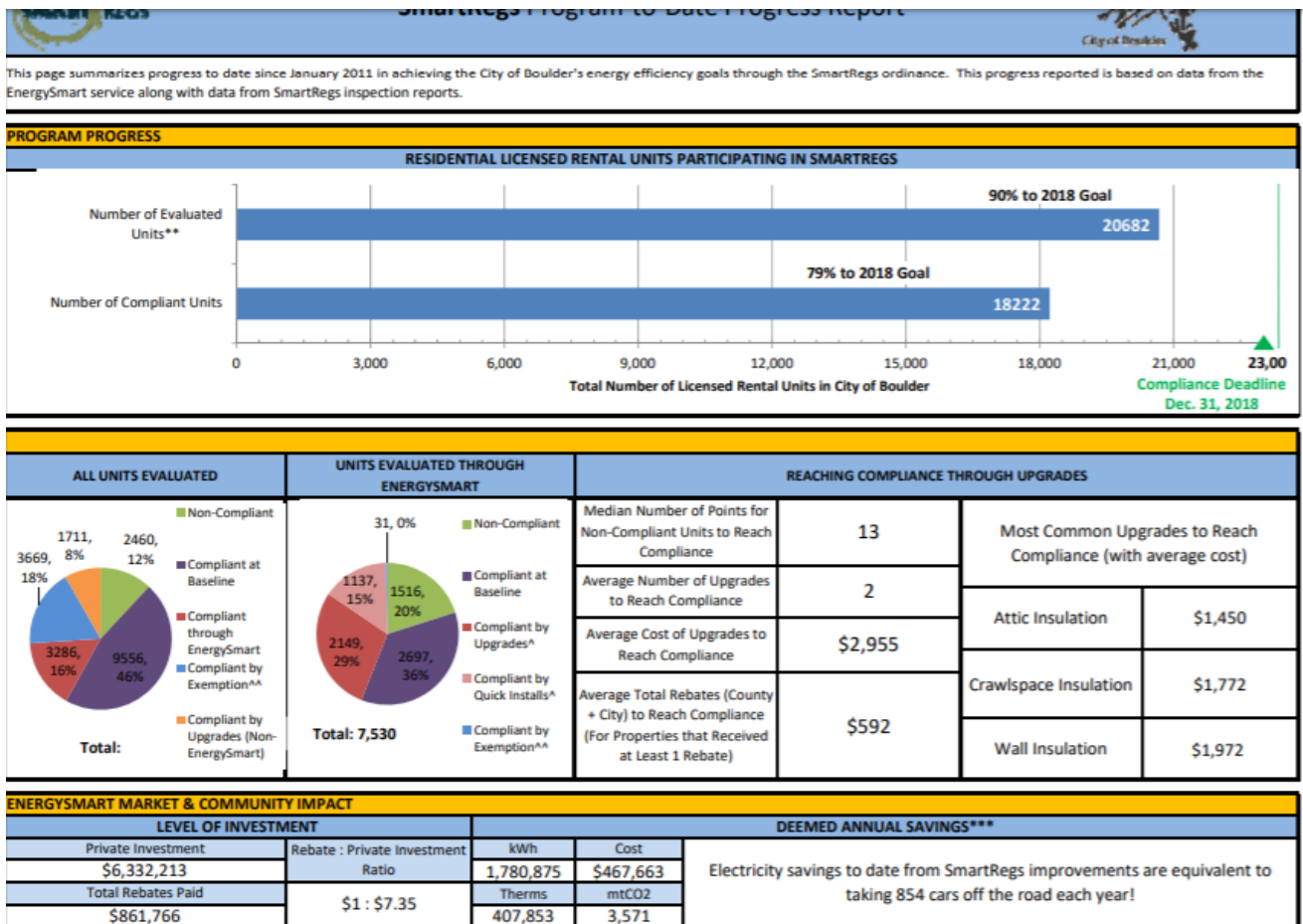
- *Mandatory*—Benchmarking complements (continued).
 - Salt Lake City: Benchmarking and Market Transparency.
 - Applicable commercial buildings (≥ 25 k sf) eligible for utility incentives with ENERGYSTAR score ≤ 49 to do “tune-up evaluations” (i.e., RCx) every 5th year.
 - Implementation of tune-up measures encouraged but not required.
 - Boston: energy assessment or major energy savings action every 5 yrs.
 - Los Angeles, Orlando, San Francisco: periodic audits, RCx.
 - Washington (state): Audits for low rating public buildings.

+ Existing Building Energy Performance

- *Mandatory* — Rental residential policies.
 - Burlington, VT: Residential Rental House Time-of-Sale EE.
 - Since 1997; administered by Burlington Electric Dept.
 - On sale/transfer, requires inspection to see if meets minimal standards.
 - If not, upgrades meeting cost-effectiveness (<7-yr. payback) and total cost criteria required.
 - Boulder, CO SmartRegs (established 2011).
 - Pre-2001 built rental housing must meet checklist or HERS equivalent to 1999 IECC by end of 2018 to get/renew rental license.

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- *Mandatory* — Rental residential policies (continued).
- Boulder, CO SmartRegs (continued)—progress tracked.



Last updated March 31, 2018

* In 2011 the total rental unit estimate was 20,000 which was set as the compliance goal. In January 2018, the goal was adjusted to 23,000 based on current rental licensing information.

+ Existing Building Energy Performance

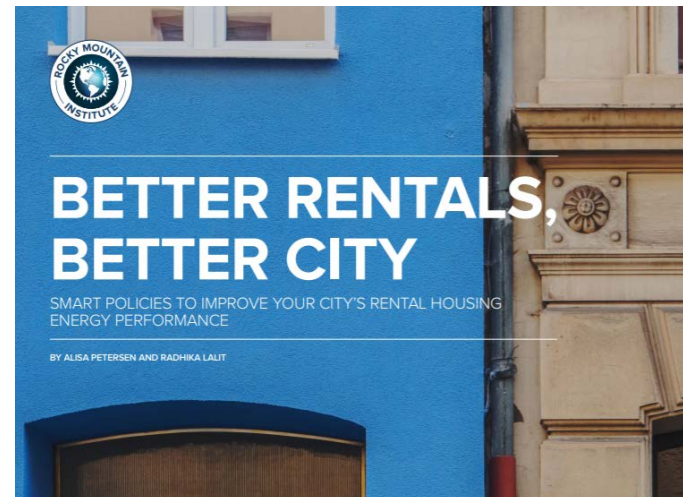
- **Mandatory** — Rental residential policies (continued)
 - Boulder, CO SmartRegs (continued)
 - NASEO EE Pathway Template case—air quality links
 - Rocky Mountain Institute—minimum efficiency standards for rentals case and initiative

ENERGY EFFICIENCY PATHWAY TEMPLATE:

City of Boulder (Colorado) SmartRegs:
Local Building Performance Program

Abstract

Energy efficiency (EE) programs can deliver air pollutant emission avoidance and reduction. Energy Efficiency Pathway Templates provide a format for summarizing EE program features and opportunities that can be shared with state environmental regulators for consideration in air quality planning. These templates can promote dialogue among State Energy Offices, environmental agencies and other pertinent bodies on potential roles for EE as air pollution management approaches. This template describes an example of local-led building performance program based on the Boulder, CO SmartRegs Program requirements for residential rental units.



+ Existing Building Energy Performance

- California AB 758.
 - CEC with CPUC and stakeholders “to develop a comprehensive program to achieve greater energy efficiency in the state’s existing buildings.”
- New York City.
 - Bill proposing mandatory upgrades (really fossil fuel caps) to existing buildings didn’t pass; to be re-introduced.
 - “Mandated fossil fuel caps will apply to all buildings over 25,000 square feet, and will trigger replacement of fossil fuel equipment and efficiency upgrades in the worst-performing 14,500 buildings,”

2016 Existing Buildings
Energy Efficiency Plan Update
December 2016



Mayor de Blasio: NYC Will Be First City to Mandate that Existing Buildings Dramatically Cut Greenhouse Gas Emissions

+ Existing Building Energy Performance

■ Clean Energy DC Omnibus Amendment.

- “strongest climate law ever passed by a U.S. city.”

- Building Energy Performance Standard (BEPS).

- Will group buildings by type.

- Set BEPS by median performance level of each type.

- Existing building >50k sf need to meet standard by 2026.

- Application to smaller buildings to be phased in.

- Most buildings efficient enough to already comply.

- Many could meet through simple operational changes.

- E.g., scheduling HVAC, turn off unused lights.

- Expect only minority of cases to require capital investment.



+ Existing Building Energy Performance

- Other possible policy tools (new and renovation projects).
 - Expedited permitting and inspections.
 - Density bonuses.
 - E.g., Arlington Co. (but that's for new devt.)
 - Zoning flexibility.
 - E.g., NYC Zone Green.



- **Summary.**
 - Addressing existing buildings critical to meet energy, resilience, economic, environmental goals.
 - Policies and programs range from supportive incentives to mandates/requirements.
 - Few of the latter but growing in type and number.
- Growing technological and policy complexity
 - EE, DR, RE, DG, energy storage, grid-interactivity,...



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Thank You

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