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Keep Context in Mind in Clean Power Plan Compliance Planning

New Jersey Clean Air Council
April 28, 2016 – Trenton, NJ

Presented by Ken Colburn, Principal

Introduction

- The Regulatory Assistance Project (RAP) is a global, non-profit team of energy experts, mostly veteran regulators, advising current regulators on the long-term economic and environmental sustainability of the power and natural gas sectors. (www.raponline.org)
  - *Foundation-funded; some contracts*
  - *Non-advocacy; no interventions*

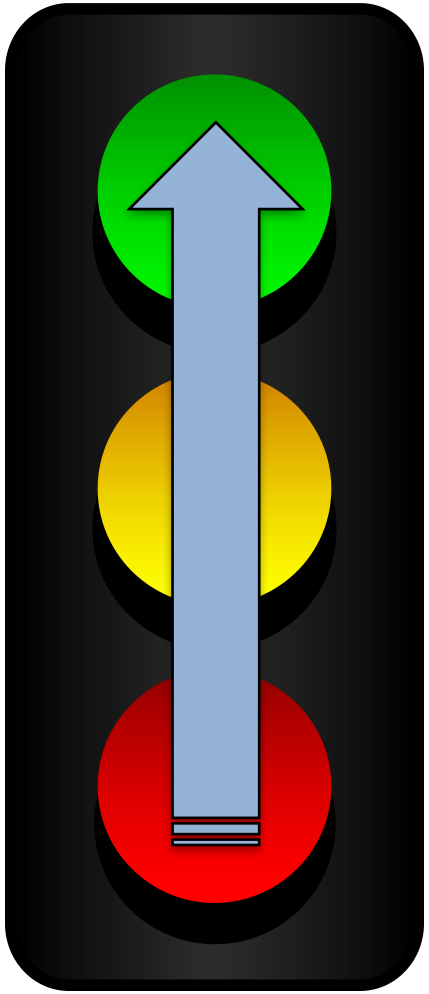
- Ken Colburn is a Principal at RAP. His experience as an air quality regulator came as New Hampshire's Air Director and Executive Director of NESCAUM.

Overview

- Clean Air Act: "No good deed goes unpunished"
- Challenging juncture; recognizing context will help avoid mistakes
- Three context mistakes in Clean Power Plan (CPP) Planning:
  - Horse Before Cart
  - Skate to Where the Puck Will Be
  - Compared to What
- Specific Issues Raised
- Looking Ahead

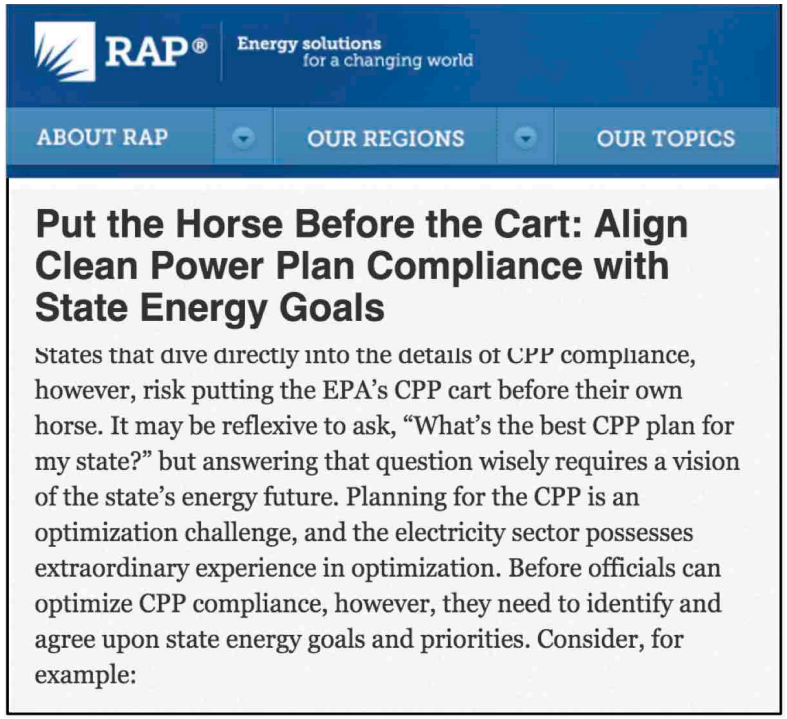
Current Context

- Many states and utilities singularly focused on cost-effective CPP compliance strategies (pending Supreme Court stay)
- But a host of other rules, initiatives, technologies, and market trends are dramatically impacting the power sector
- State CPP – and economic – results hinge on "all of the above," not just CPP



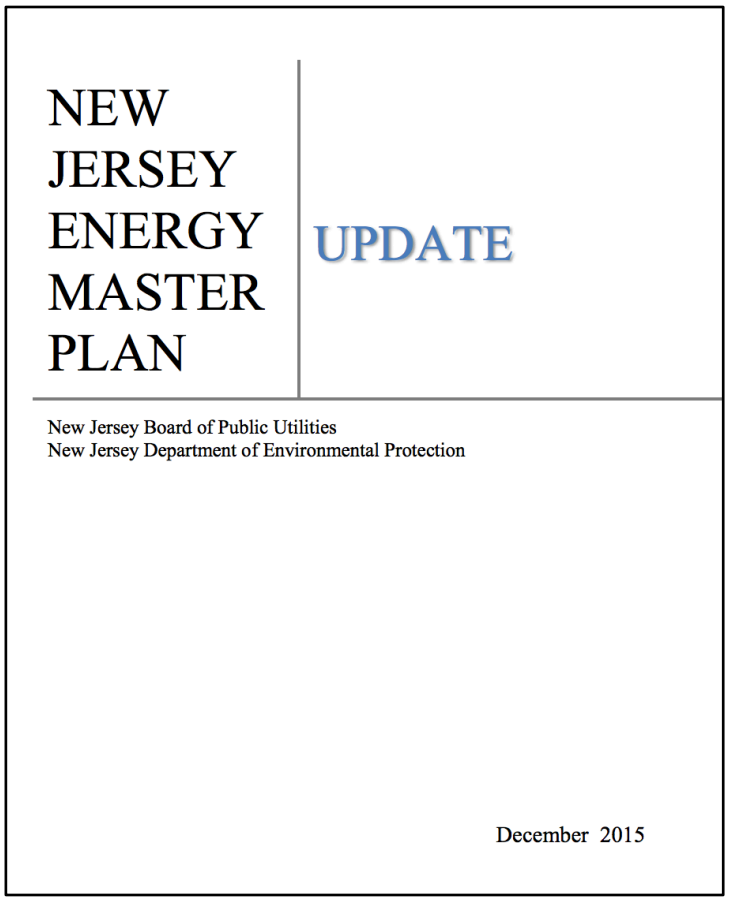
Mistake #1: Horse Before Cart?

- Face higher risk if dive directly into CPP
- CPP planning is an energy optimization challenge…
- Optimization => identify state energy goals and priorities



http://www.raponline.org/featured-work/align-clean-power-plan-compliance-with-state-energy

Mistake #1: Horse Before Cart?



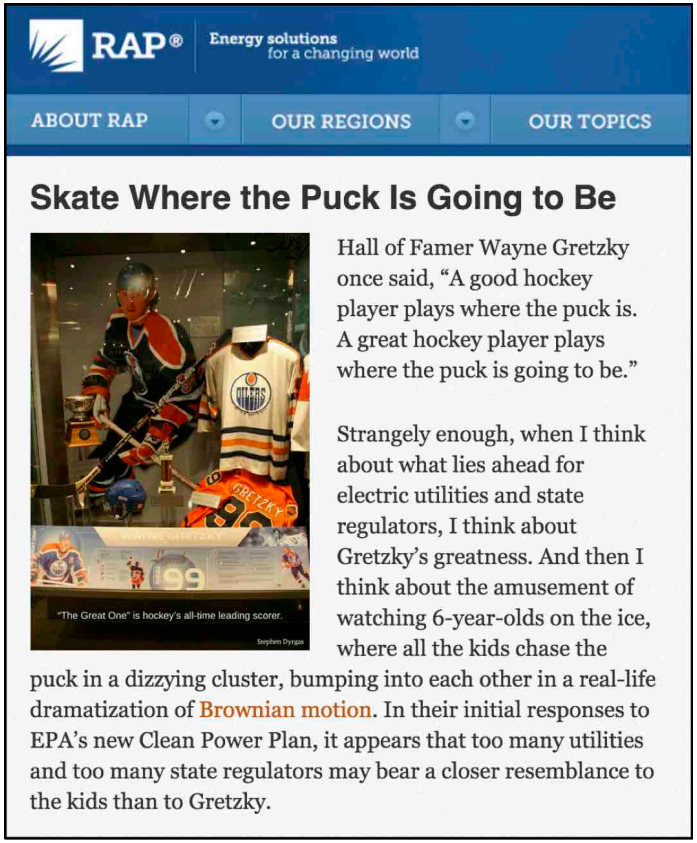
- NJ has wisely put its *Energy Master Plan* "horse" ahead of its CPP "cart"
- But may want to modify, given changes affecting the power sector

NJ *Energy Master Plan* Actions

EMP Action Plan Sections	EMP Recommends	Notes
1. In-state electricity resources	• Expand; build; develop	• Needn't be "cost-effective" too? • Demand growth assumptions?
2. Cost-effective RE	• Promote; support; monitor	• Dramatic cost declines • Underappreciated risk to BAU (e.g., Bypass)?
3. Cost-effective EE	• Promote; support; monitor	• Developing machine-to-machine communications (Internet of Things) • Underappreciated threats to BAU?
4. Innovative technologies	• Support; improve	• Underappreciated data analytics; IoT? • Underappreciated storage (H20, electricity)?
5. Energy infrastructure resiliency	• Increase; create	• Needn't be "cost-effective" too? • Underappreciated predictive analytics?

Mistake #2: Skate to Puck?

- Wayne Gretsky: "Skate to where the puck is going to be."
  - (Not to "where it is")
- Many states are "skating to where the CPP is" today…
  - (Not to "where it will be")



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Skate Where the Puck Is Going to Be

"The Great One" is hockey's all-time leading scorer.

Hall of Famer Wayne Gretzky once said, "A good hockey player plays where the puck is. A great hockey player plays where the puck is going to be."

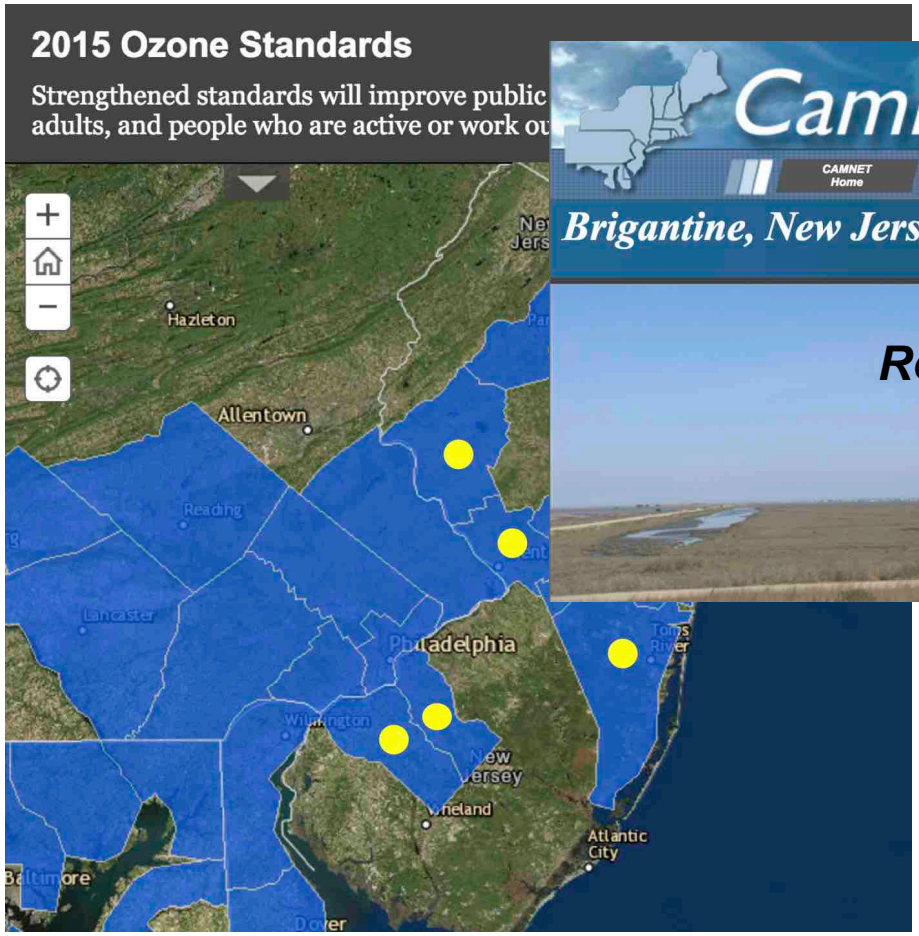
Strangely enough, when I think about what lies ahead for electric utilities and state regulators, I think about Gretzky's greatness. And then I think about the amusement of watching 6-year-olds on the ice, where all the kids chase the puck in a dizzying cluster, bumping into each other in a real-life dramatization of Brownian motion. In their initial responses to EPA's new Clean Power Plan, it appears that too many utilities and too many state regulators may bear a closer resemblance to the kids than to Gretzky.

http://www.raponline.org/featured-work/skate-to-where-the-puck-is-going-to-be

Where Is the Puck Going to Be?

- Carbon certainly, and DEP, BPU, and the Clean Air Council are wisely:
  - Communicating with each other
  - Evaluating strategies to thrive under carbon constraints if litigation fails
- But also…

Other Environmental Issues Loom

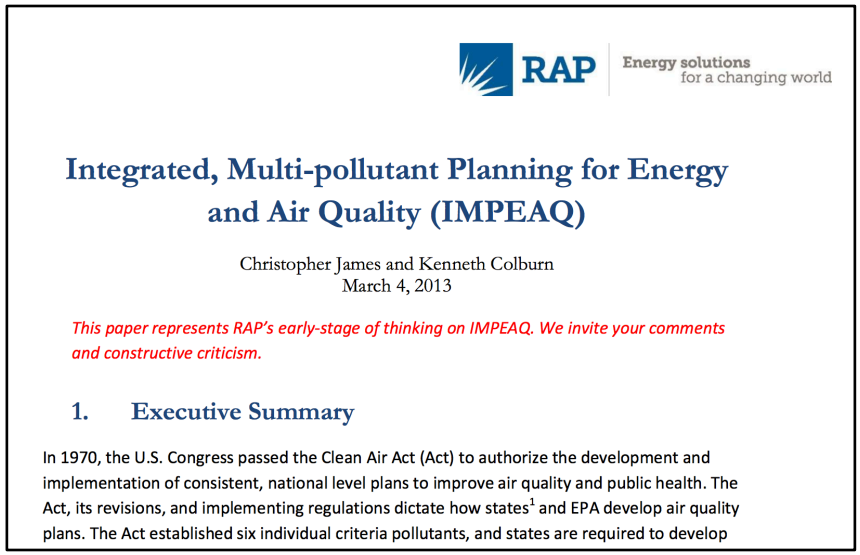


More stringent rules/standards for criteria pollutants, toxics, water quality/quantity, ash, methane, etc. likely in future…

Where Is the Puck Going to Be?

- Comprehensive, multi-pollutant planning
  - Carbon, ozone, particulates, regional haze, etc.
  - Regulatory burden goes exponential otherwise
  - Possibly multi-sector too (not just power)
- Suggest working to *integrate* energy and air quality planning
  - Leverage relationships, analyses CPP built
  - Combine strengths, eliminate weaknesses, of IRP and SIPs

"Integrated Multi-pollutant Planning for Energy and Air Quality" (IMPEAQ)



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Integrated, Multi-pollutant Planning for Energy and Air Quality (IMPEAQ)

Christopher James and Kenneth Colburn
March 4, 2013

This paper represents RAP's early-stage of thinking on IMPEAQ. We invite your comments and constructive criticism.

1. Executive Summary

In 1970, the U.S. Congress passed the Clean Air Act (Act) to authorize the development and implementation of consistent, national level plans to improve air quality and public health. The Act, its revisions, and implementing regulations dictate how states[1] and EPA develop air quality plans. The Act established six individual criteria pollutants, and states are required to develop

New Jersey as the first state pilot?

IMPEAQ – *www.raponline.org/document/download/id/6440*

Columbia Law review – *www.raponline.org/document/download/id/6568*

Compared to What?

- Massive uncertainties:
  - What CPP will survive judicial review?
  - What Administration/EPA environment?
  - What technologies will come to market?
  - What demand changes/bypass will they create?
  - How will electricity markets change? Regulators?
  - Extreme weather events?
  - What else will change with time vs. CPP choices?
- Certainties:
  - Wisdom of planning; focus on risk and sensitivity
  - Key on "least bad" CPP options across scenarios

Bears on Specific CPP Issues

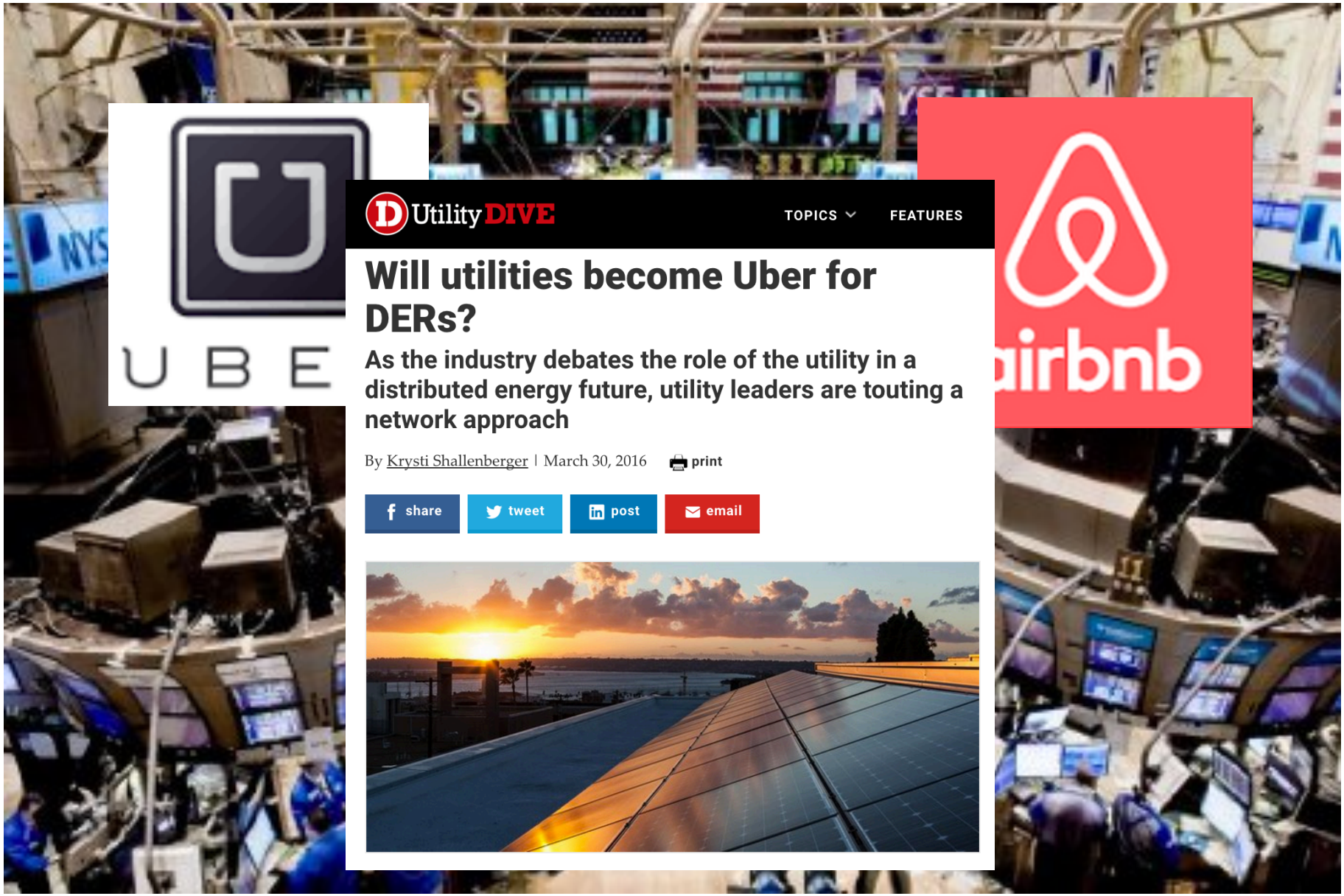
- FIP or State Plan?
  - FIP cheaper, but sources likely prefer state oversight
- Mass-based or Rate-based?
  - Superb technical analysis by DEP; optimal path today
  - Still optimal under sector transformation scenarios?
  - Can other sectors be included when regulated?
  - How difficult to change in future?
  - Both options have issues (e.g., allocations under mass)
- Trading?
  - Reduces cost, but also control; public expectations?

Bears on Specific CPP Issues

- New-Source-Complement or Leakage?
  - Poor choices; former easier; await courts
- Compliance Burden (NJ-LSEs-EGUs)?
  - A continuum of flexibility, and probable aggravation
  - Take advantage of markets where possible
  - How difficult to change in future?
- CEIP?
  - Good intent, questionable implementation
  - NJ may be able to do better early action on its own

Looking Ahead

- For 100 years, we've managed supply only
  - We can now manage electricity demand
  - Just waiting for penetration
  - Will evolve to a "real market"
  - What role for regulators, regulatory compact?
  - Uncharted waters; risky business!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Will utilities become Uber for DERs?
As the industry debates the role of the utility in a distributed energy future, utility leaders are touting a network approach
By Krysti Shallenberger | March 30, 2016
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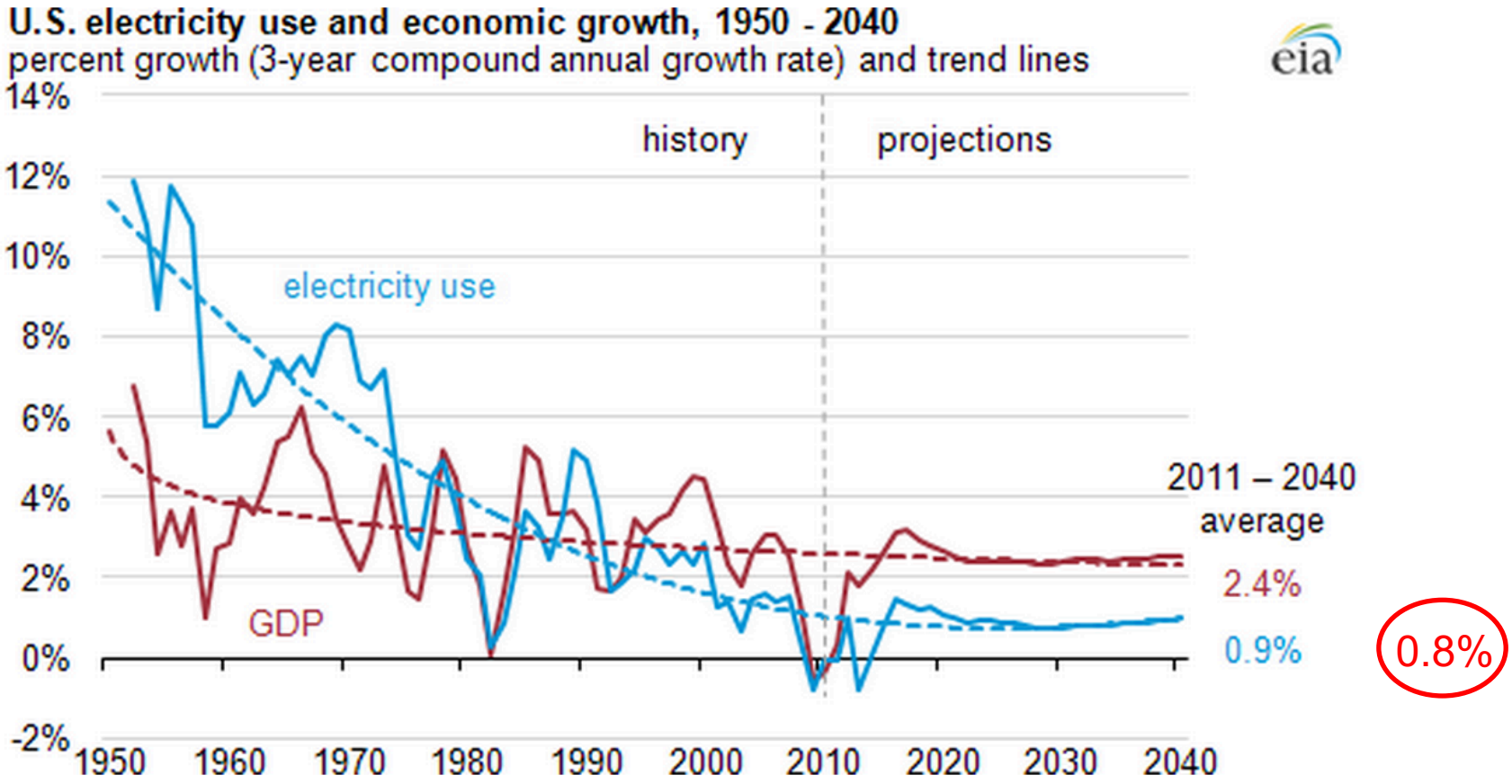
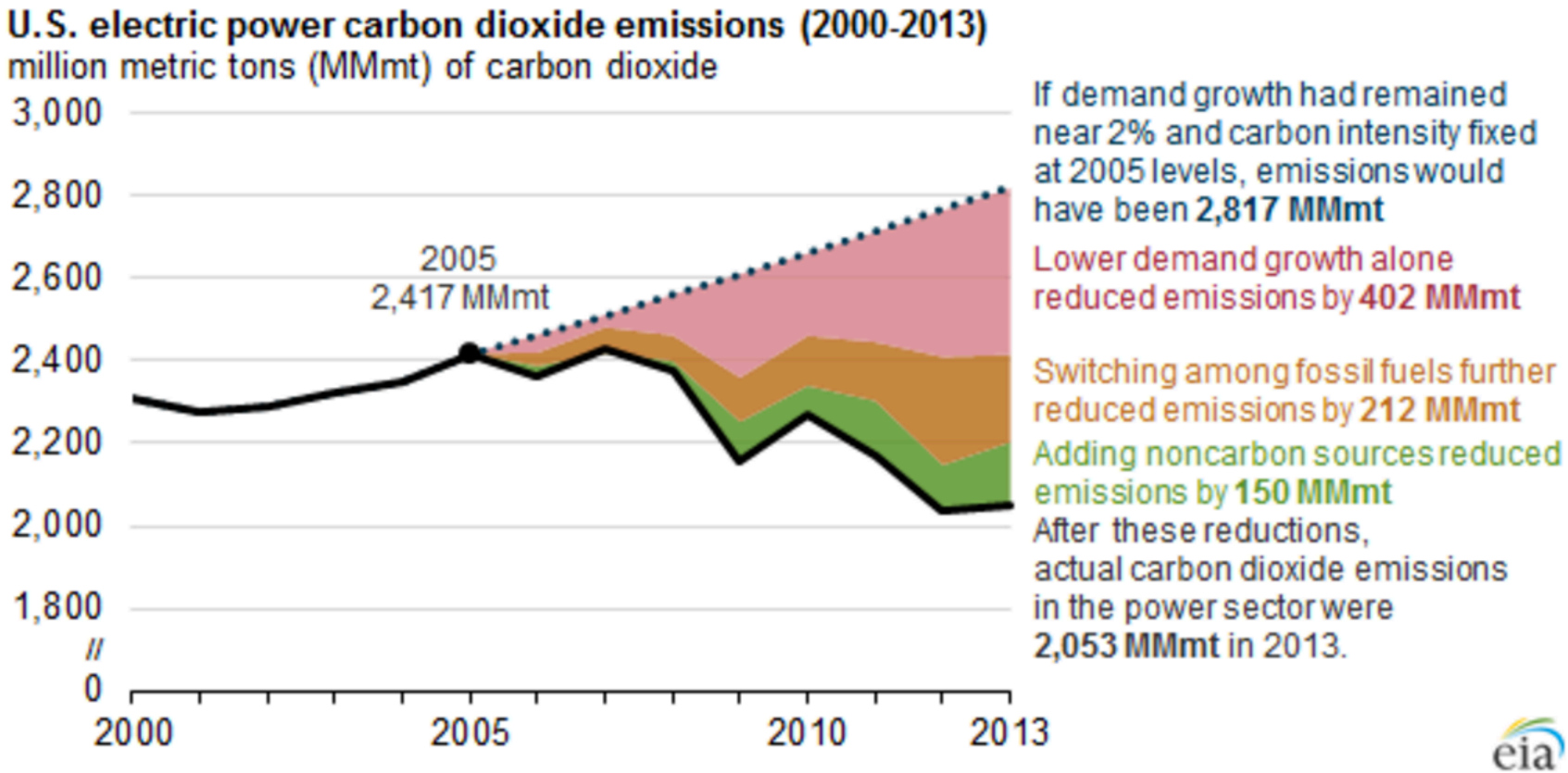
U.S. economy and electricity demand growth are linked, but relationship is changing



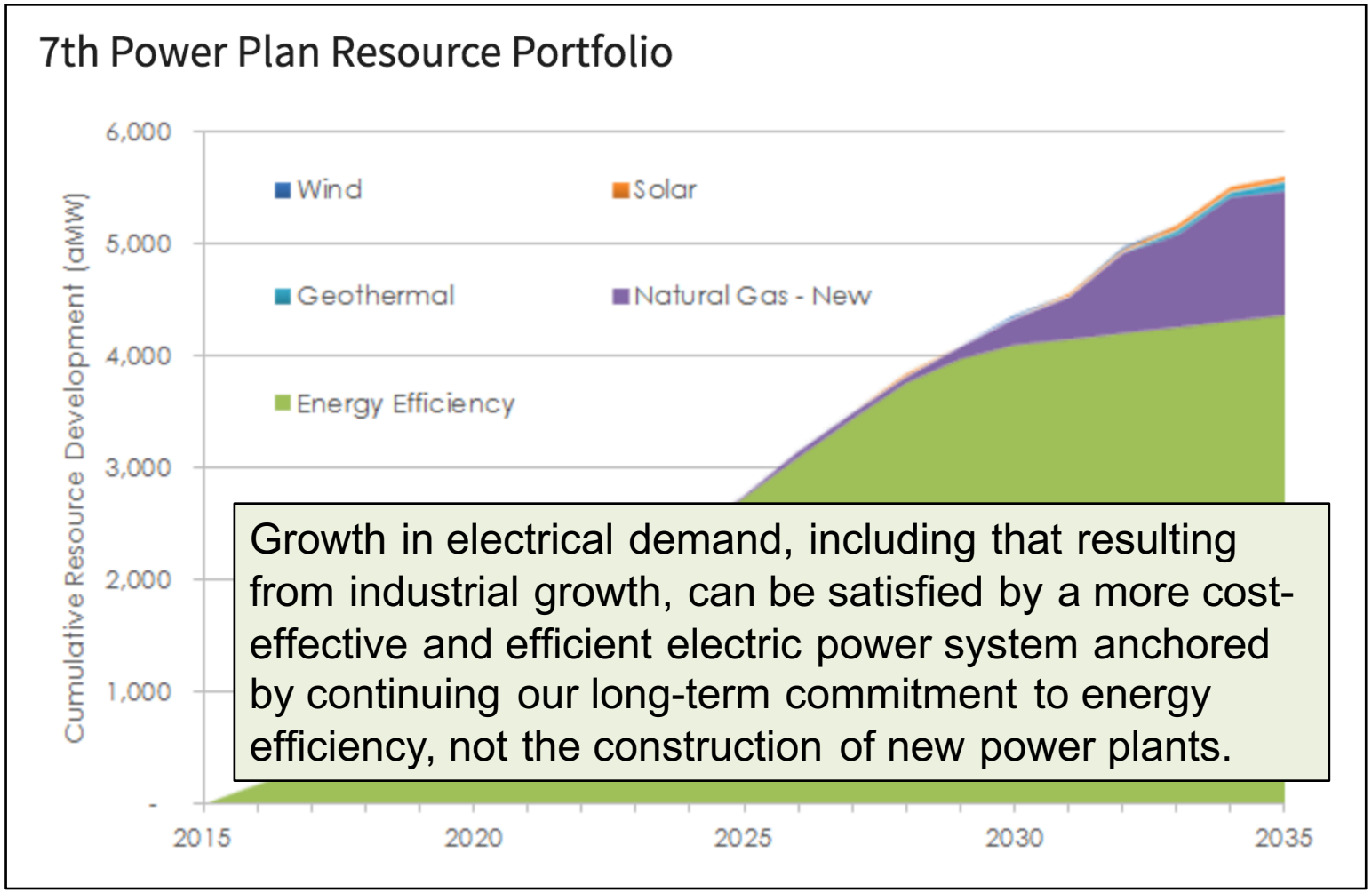
Source: U.S. Energy Information Administration, Annual Energy Outlook 2013 Early Release.

Lower electricity-related CO2 emissions reflect lower carbon intensity and electricity use



Source: U.S. Energy Information Administration, *Annual CO_2 Analysis*

Pacific Northwest Power & Conservation Council – 7th Power Plan (10 Feb 2016)



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Business

Warning for investors,

ft.com/world

BlackRock warns on stranded assets

Channels: Equity, Investors, Stranded Assets, COP

Companies: BlackRock, Carbon Tracker Initiative, CTI, AP4

People: Warren Buffett

04 November 2015

BlackRock has warned that companies with high-cost fossil fuel reserves are at risk of being devalued, adding that "climate change has arrived as an investment issue".

The world's biggest asset manager believes that, as efforts to tackle global warming gather pace, "regulatory risks are becoming key drivers of returns" and there is the potential for fossil fuel assets to be devalued, or rendered 'stranded', as policies are brought in to reduce emissions.

assets of fossil fuel companies could be left "stranded" by tougher rules to curb climate change.

Looking Ahead

- Analogue to Waxman-Markey (2009)?
  - Has CPP already done what's needed?
- Focus on reduced risk, increased flexibility, avoid potential stranded costs
- Appears EE/RE leadership today => competitive advantage tomorrow:
  - Lower costs, lower emissions, fewer risks, greater scalability, less infrastructure, multiple co-benefits, etc.

NJ RE Leadership (4th) vs. EE "Not So Much" (23rd)

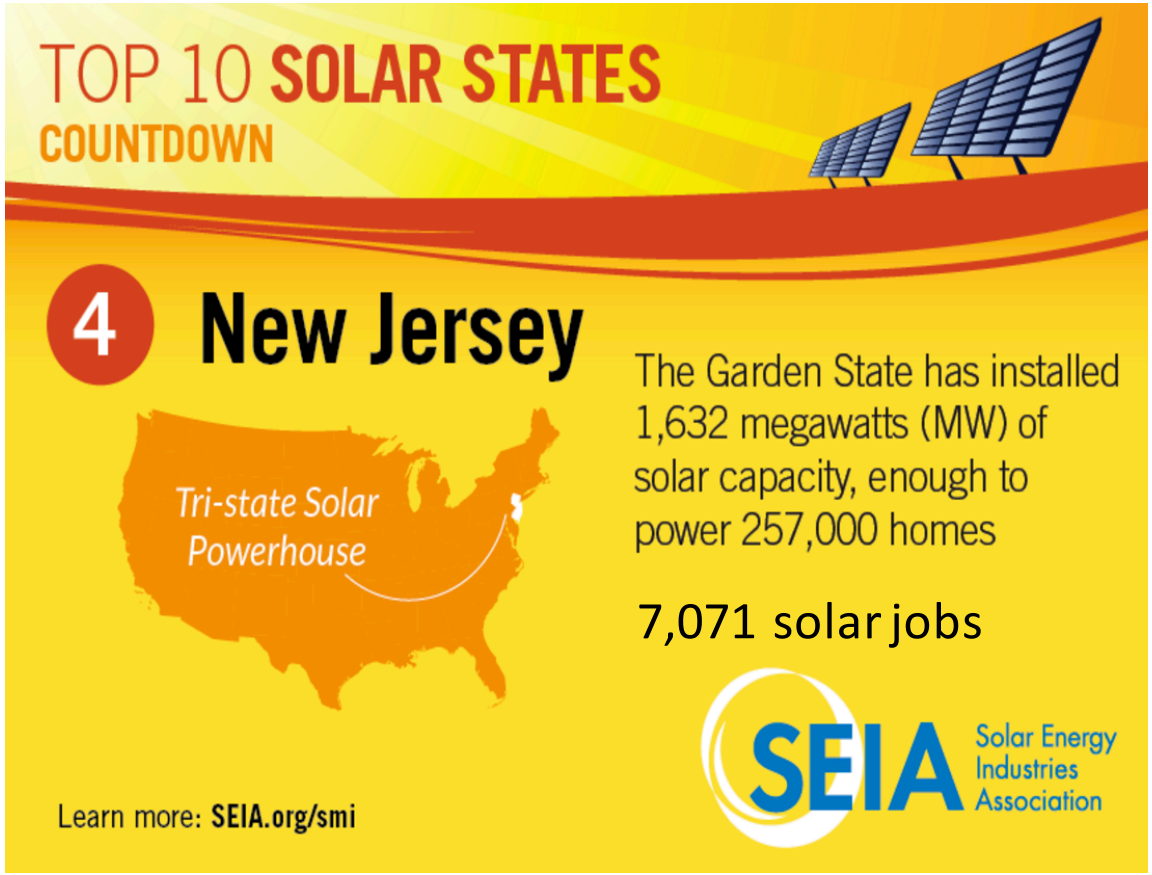

Table 13. 2014 net incremental electricity savings by state

State	2014 net incremental savings (MWh)	% of 2014 retail sales	Score (6 pts.)
Rhode Island	268,468	3.51%	6
Massachusetts	1,339,026	2.50%	6
Vermont	102,770	1.85%	5.5
California †	4,082,256	1.58%	4.5
Arizona	1,190,123	1.57%	4.5
Hawaii	144,240	1.53%	4.5
Michigan	1,386,912	1.35%	4
Connecticut	387,863	1.32%	3.5
Maryland	792,354	1.29%	3.5
Oregon	595,548	1.27%	3.5
Minnesota †	824,756	1.22%	3.5
Maine	145,413	1.21%	3.5
Iowa	550,035	1.17%	3.5
Illinois	1,513,045	1.08%	3
Ohio*	1,565,049	1.05%	3
Washington †	946,565	1.02%	3
New York	1,338,551	0.92%	2.5
Colorado[1]	472,000	0.88%	2.5
Wisconsin	527,283	0.76%	2
Indiana[2]	768,927	0.74%	2
Utah	213,468	0.71%	2
Idaho	159,310	0.81%	2
New Jersey †	500,784	0.68%	2
Montana†	92,923	0.66%	1.5

Morph NJ *EMP* Into NJ CPP Plan?

EMP Action Plan Sections	EMP Recommends	Might Consider
1. In-state electricity resources	• Promote; support; monitor	• Demand side options; NWPCC 7th 5-year plan • CO2 limits on gas before NGCCs paid off? • Reduced risk of future stranded costs
2. Cost-effective RE	• ***Expand; build; develop***	• Internet of Things => more accurate, aggregated participation in the grid • Increasingly level playing field (NY REV, MN e21…) • Bypass risk with storage
3. Cost-effective EE	• ***Expand; build; develop***	• Internet of Things => management of demand, DR • Massive area of current innovation, devices and systems (Uber, etc. analogue?)
4. Innovative technologies	• ***Expand; build; develop***	• Data Analytics; Internet of Things (example: EM&V) • Storage (H20, electric) – Moore's Law • "Management of Demand" => genuine market?
5. Energy infrastructure resiliency	• Reinforce; support; monitor	• Pursue low-infrastructure energy options (EE, DER) • Micro-grids and data analytics defenses

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Thank You for Your Time and Attention!

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power sector. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

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