



RAP

Energy solutions
for a changing world

Executive Briefing for Connecticut Officials to Promote Sustainability

A Briefing for the
Connecticut Department of Energy and Environment

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The Regulatory Assistance Project

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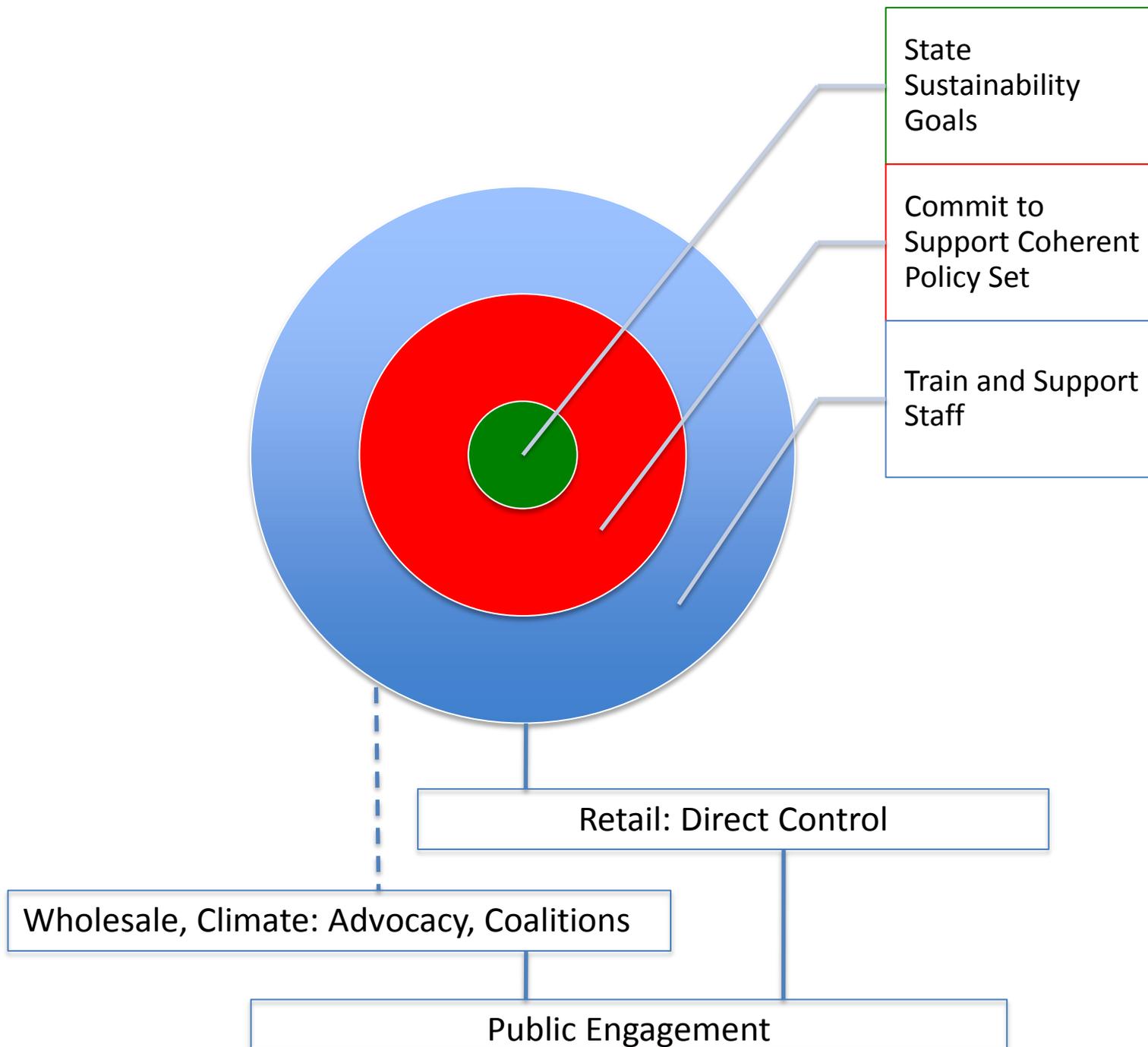
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Introducing RAP and Rich

- RAP is a non-profit organization providing technical and educational assistance to government officials on energy and environmental issues. RAP Principals all have extensive utility regulatory experience.
 - Richard Sedano directs RAP's US Program. He was commissioner of the Vermont Department of Public Service from 1991-2001 and is an engineer.

RAP Empties the Cupboard

- High Level Point of View
- Energy Efficiency
- Renewable Energy
- Integrated Resource Planning
- Low-Income
- Business Models
- Wholesale Markets
- Public Engagement
- Training



Roadmap

- **Priorities**
 - Importance
 - Do-ability
- **Series**
- **Parallel**
- **Limits**
 - Resources
 - People
 - Talent, Imagination and Energy
 - Number
 - Attention of key people, bottlenecks
 - Leverage
 - Ability to get things done
 - Ability to get others to do more
 - Time
- **Support in the hustings – state of the case**

A Specific Ideal

- Coherence
 - Clear Objectives
 - Policies all pulling toward objectives
 - Policies all consistent, not in conflict
 - Actors (public and private sector) see coherence

Implications for Coherence

- Societal evaluations
 - Reasonable efforts to include and quantify non-zero factors of policies and investments
- Complementary Policies
 - Many good ideas made better in a nest of supportive ideas

Merits of Long term strategy

- Key actors know what is expected
- Business allies can invest
- Citizens expect performance

Retail Power Sector Regulation

- Energy efficiency
- Renewable energy
- Distribution and retail energy suppliers
- Regulatory emphasis

Best Practices

- Stable EE, held in high esteem, continuous improvement, valued fully
- Customer generation based on customer choice, not hindered by regulation, subsidized to reflect societal and system values
- Wholesale policy that foresees a significant share of generation from variable renewable sources, and considers the environment, plus sustainable biomass policy
- Rate design reflecting long run marginal costs and time sensitive usage patterns (day, season)

Energy Efficiency – Visions of Success

- Programs, System Benefit Charge
 - ECMB working well, revenue flowing, big savings
- Budgets
 - EE Priority – no more raids
- Throughput incentive
 - Ended
- Performance
 - Inspire excellence, not just compliance

Programs

- Scope
 - Whole buildings and systems
 - Uneconomic measures in economic programs
 - Unregulated fuel efficiency
 - Target all sectors, all income strata
 - Higher budget creates possibilities
- Evaluation
 - Risk and non-energy benefit
- Attribution of savings



In the end, Programs are about Customers

- Make it easy
 - With respect
- Behavioral Science and Economics emerging to improve programs and rates

Customer Generation, incl. CHP

- Significant Potential
- Utility system interests
 - Identify them
 - Then make it easy for customers
 - Compensate customers for value provided

Financing

- Key to customer doing energy efficiency is customer wanting to do energy efficiency
 - Focus of program designs
 - Financing helps some situations, but is one aspect among many

Attribution

- Net savings
 - Shows demonstrable value for money
- Gross savings
 - Shows gross savings
- What does consumer advocate want to know?
- What does system planner want to know?
- What does climate scientist want to know?
- How do we want to motivate the utility?

EERS or a calculated goal for savings?

If Motivation is Deficient

- EERS gets everyone focused on the target
 - Performance counts, not spending
- Figure out how to do it later
- Calculated goal (from an IRP type process) can feel time consuming

If Motivation is Good

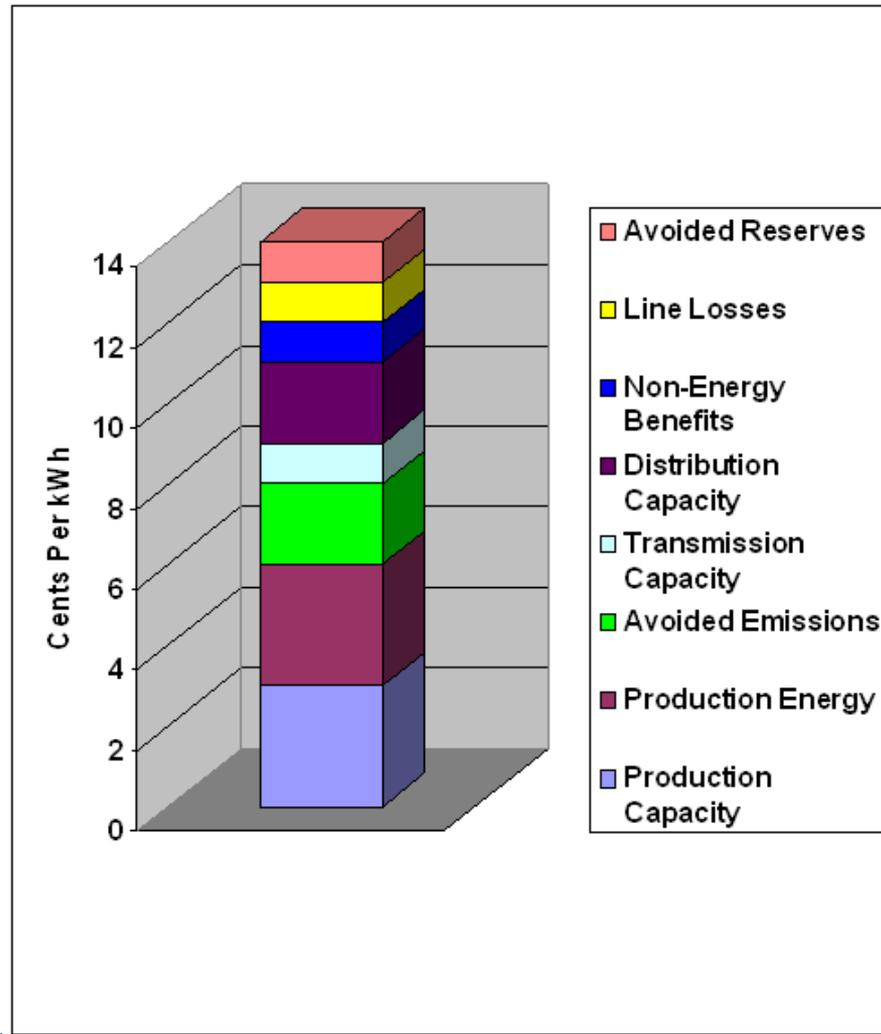
- EERS feels artificial, not associated with value
- Goal will likely be exceeded
- Calculated goal (from IRP?) reveals value
- Strategic assessment can guide deployment plan
- Extend to DG/CHP and DR

Air Benefits

- Changing EPA regulations over next several years
 - If energy efficiency to reduce consumption is the cheapest way to reduce pollution
 - How are air regulations going to promote energy efficiency when air regulators have no authority?
 - How are utility regulators with authority over energy efficiency going to fully appreciate the potential for energy efficiency to be a key compliance strategy?
 - What does NE GIS say about emissions caused by consumption in CT?
 - Disclosure?



Including all values



Renewable Energy

- Local scale
 - Feed In Tariff with competitive attributes
 - Net metering
 - Transition to Bi-directional tariff
 - Interconnection
 - Make it as easy as possible
 - Financing
 - Utility ownership

Renewable Energy

- Grid scale
 - Resolve biomass
 - Connection to transmission
 - Connection to responsive resources
 - Supply
 - Demand

Distribution and Retail Energy Suppliers

- Acquisition of supply for default service
- Default service rate design
 - Sources of current costs vs. future costs (average v. marginal)
 - What do you know about cost allocation?
 - Cost basis of inclining block rates
- Strategic Planning to reveal values
 - Distribution Credits for beneficial investments
- Smart Grid
 - Design for policy, not just operations
 - Promote EE, DR, DG
 - DR strongly connected with variable generation objectives

Complementary State Actions

- Codes and Standards
- Fiscal Policy
- State Facilities

Planning

- How strategies are conceived, tested
 - Everything on the table
 - Resources
 - Regulatory options (i.e. rate design)
- Balances Cost, Reliability, Quality
- Risks identified, characterized, assessed
 - Sink the state risks can be insured
 - Relative risks guide investment and attention
- Evaluate consumer and utility outcomes
 - Surprises
- “Planning is everything, the plan is nothing”
 - routine

What is an IRP, or whatever you want to call it?

A quality resource planning should include the following factors:

- a) Rational **economic assumptions**
- b) Evaluation of **supply and demand resources** using consistent economic criteria and bias projected over time
 - A forecast is not a prediction
 - Consider distinct scenarios (planners' choice)
 - Consider distinct sensitivities (risks, events out of planners' control)
- c) Quantification, where possible, of both **external costs and non-energy costs and benefits** of resources so that clean energy resources compete fairly against conventional resources;
- d) **Full consideration of resource options**, including relevant production, transmission, distribution, reserves costs and losses
- e) A **public participation** mechanism to ensure all relevant measures are considered and evaluated.
- f) Periodic **Review and acceptance** of a final plan document by the regulator

State interest in Planning

- States are responsible for energy outcomes
 - Whether the statute says so or not
- Utility planning valuable
 - Utility applies its expertise to identify needs and likely investments
 - Work in concert with ISO-NE (not in conflict)
 - Engagement with community
 - Resources standards just a constraint, not a problem
- State planning capacity also valuable
 - Total energy/environment(/transit?) picture
 - Connect to SIP compliance and other...

Low income consumer policy

- Rate discount
- Special EE programs
- RE targeted at multi-family
 - Counter correlation to privilege

Performance

- How should utilities earn money?
 - What frustrates the public about utilities?
 - How do you want utilities to be motivated?
- Utilities are motivated by policy, which chiefly reflects how utilities earn money
- What do customers care about?
 - Find out
 - Pay utilities for that (part above debt return)

Reward for what Consumers Care about

- Reliability
- Customer Service
 - Routine
 - Response to problems
- Other stuff
 - Energy efficiency
 - Renewable energy
 - ???

Extent of Performance Reward

- Same as now
- More than now
 - If consumers get more than now, is it OK for the utility get more than now?
- Can you define excellence compared with compliance?
- Can you recognize inspired compared with routine?
- If you cannot, don't change a thing

Untried Idea

- You could place earnings above debt rate subject to performance
 - Without a bit of upside, utility would likely oppose risking current levels of return (adjusted for ultimate resetting of utility risk)

Decoupling

- Solving the throughput incentive critical
 - Or else utility loyalty divided
- Decoupling solves throughput, has many advantages over other solutions
 - Adheres to revenue finding from last rate case
 - Loyal to keeping lights on and service up
 - Can be simple to administer
 - A capital adjuster can be a challenge
 - Will reduce risk of the firm, leading to customer dividend
 - Compatible with performance system
 - Promotes a longer view of relationship of utility and state
 - Rate design reserved for influencing customers
 - Ex poste lost revenue calculation dreadful

Wholesale

- State as advocate
 - Work with other states, states powerful as a unit
 - NESCOE
 - Joint renewable energy acquisition
 - Transmission siting
- FERC
- ISO-NE
- Wholesale stakeholders in Connecticut

Implications of Commitment to Variable Resources

- Some foresee need in eastern interconnect for 30% variable resources by 2030, much more by 2050
 - Responsive resources needed
 - Responsiveness may be as or more important than capacity
 - Demand response a 24/7/365 resource
 - Smart grid
 - EE reduces burden

Clean First

- Preference for clean resources
 - Redefine comparable
 - Reflect costs of environmental compliance
 - Transmission used for intended purpose
 - Financial mechanisms
 - Interconnection queue express lane
- Order 1000
 - Path toward Clean First

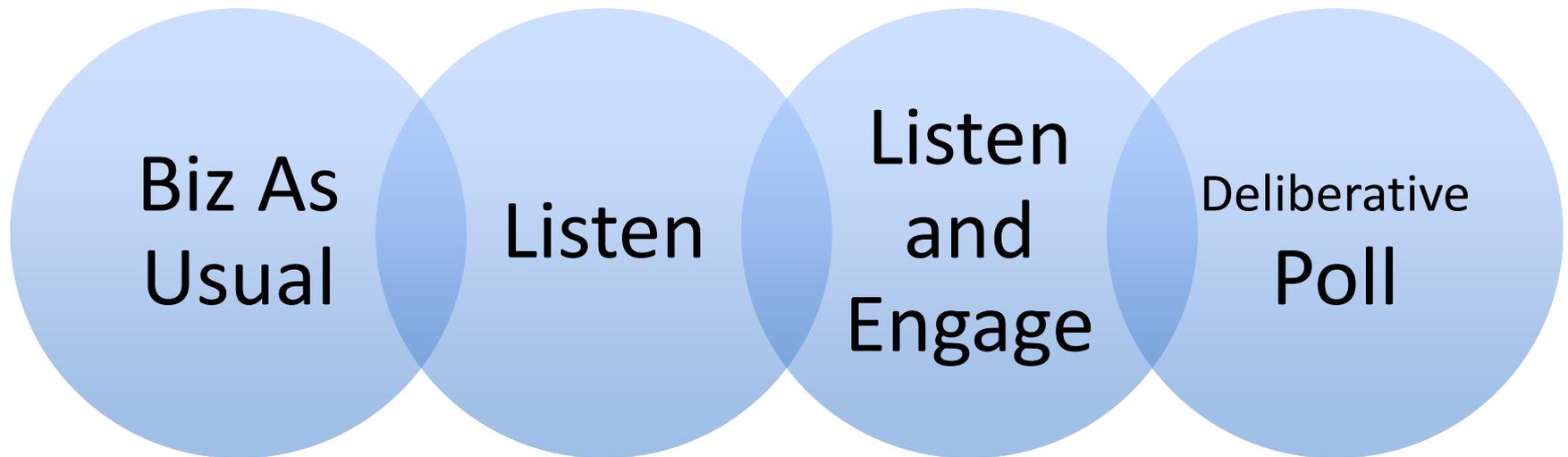
ISO-NE Planning Evolution

- Long term (check)
- All resources (check minus)
 - Harder to identify stretching toward more distributed resources even though that is easier than stretching toward more G&T
- Iterative (x)
 - BAU system need should produce a variety of stock solutions including wires, supply and customer resources in discrete combination

How will some key matters associated with carbon play out?

- National renewable energy objectives
 - Eastern interconnection to 30% wind by 2030
- Carbon caps that influence dispatch and investment
- Is there an opportunity for governors to enter the field of wonks and stakeholders and bring order?

Public Engagement



Citizens engage and react to real dilemmas

Engaging and Stimulating Other Delivery Systems

- Communities
- Faith based
- Opinion Leaders
- Energy strategies become community strategies
- Supported by small area, coherent media

Training Plan Ideas

- Advanced EE methods
- RE strategies
- Planning
- Regulatory Matters
 - Business incentives and risk
 - Pricing

Responses

- What is the View of the Advocate?
- What are the Utilities saying Now?
- Other Important Points of View?

Sources

- LBNL
- EPA Website National Action Plan
- DOE Website SEE Action
- ACEEE
- NREL
- RAP
- Brattle
- Edison Foundation--Institute for Energy Efficiency
- Institute for Market Transformation

About RAP

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 and natural gas sectors. 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.raonline.org

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Types of Cost of Service Studies

Embedded Cost

- Divide up actual current costs of the utility system
- Backward-looking
- Require detail of historical costs
- Most state regulators use for IOUs
- Dozens of different methods

Marginal Cost

- Measure the cost of building and operating a new utility system.
- Forward-looking
- Base cost allocation on the replacement cost of the system
- Require less data
- Used by many states, including California, Oregon, Montana

Vintaging: Assigning certain older, usually cheaper resources to specific customers. Seldom used, but sometimes applicable.

Some of the Basic Theories and Principles for Cost Analysis

- There are as many ways to calculate “cost of service” as there are analysts doing studies.
- No method is “correct”
- Many regulators require multiple studies, and consider the results of multiple methods.
- Some are based on engineering principles, some on economic principles.