Vermont’s Energy Forecasting Efforts

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Who We Are?

- Vermont Department of Public Service
  -- Public Advocate
  -- Regulated Utility Planning / Technical Experts
  -- Oversee 21 Electric Utilities and 1 Gas Utility in a state with a population of roughly 610 thousand
  -- Responsible for all fuels planning
  -- Participate in regulatory proceedings before the PSB
  -- Roughly 40 staffers (4 in my Planning Division – typically 1 forecaster)
Major Forecasting and Policy Simulation Needs

- **Comprehensive Energy Plan**
  - Required under statute every 5 years
  - Draft Released in May 2008

- **20 Year Electric Plan**
  - Required under statute at least every 5 years
  - Last Released January 2005, draft update in October 2006

- **Governor’s Commission on Climate Change**
  - with DPS assisting on the energy policy analysis
Vermont’s Traditional Planning Framework
New Challenges for Forecasters

New Areas/Markets to Price Forecast

- FCM
- RGGI
- REC
- Electric Ancillary Services

New Demands on Forecasting Capabilities

- Carbon Planning
- Public and Stakeholder Processes
- All Fuels Efficiency Planning
- Integrated Transmission Planning
- Alternative Regulation Plans
- Rural Economic Development Potential
- 25x25
Forecasting Process

- AESC Collaborative (Synapse)
- Outsource (GDS)
- PSB Process
- Expected DSM
- In-house & Outsource (E^3)

Avoided Costs (Electric and All Fuels) → Estimate of Efficiency Potential → Set Budgets → Integrate to Baseline Forecasts

USES
- Integrated Transmission Planning
- Alternative Regulation Plans
- Carbon Planning
- Long Term Energy Planning
Vermont Electric Energy Forecast

Source: VT DPS

VT Electric Energy Forecast

Source: VT DPS

- Energy Without New DSM
- Energy with New DSM
Vermont Electric Peak Forecast (Extreme Summer Weather)

Source: E³ report for VT DPS, Docket 7373
## Forecasts Approaches Used

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<td>Fuel Prices and Avoided Energy Costs</td>
<td>DOE forecasts customized to Vermont and New England</td>
<td>Collaboration with neighboring states and utilities through AESC</td>
<td>- Affordable</td>
<td>- Timing</td>
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| Economic and Demographic                      | • Moodies  
• REMI                                           | Secondary contracts with sister agencies                | - Affordable                           | - REMI capabilities have been underutilized       |
| Electricity Energy and Peak                   | • In-house  
• Outsource for larger project reviews | VSPC (relatively new instate planning process)        | - Some bill-back opportunities in formal cases | - Inadequate peer review of in-house forecasts     |
| Comprehensive And Integrated Modeling        | • VENSIM/ System Dynamics  
• Old Energy                                      | ???                                                     | - Comprehensive                         | - Work-in-progress       
|                                               |                                              |                                                         | - Initial build time                      |
Comments and Conclusions

- Need for effective forecasts has increased substantially during a period of declining budgets and personnel (on an already small resource base)
- Successful Strategies so far …
  - Partnering with other jurisdictions
  - Outsourcing (where funds are available)
  - Fostering planning processes that clearly places burden of forecasting on others
  - Leverage forecasting efforts/license arrangements from sister agencies through secondary licenses
  - Keeping it relatively simple and leveraging work of others
- Where we have struggled …
  - Complex models (building system dynamics model)…, but plan to persevere
  - Single forecaster (staff turnover and inadequate peer review)
- Increasing demand for forecasts and independent analysis (Strategy going forward is to continue to build a comprehensive and – hopefully – transparent policy simulation and forecasting environment using system dynamics working first from Energy 2020 framework, at least in the early going)
Appendix – Web References to Plans, Studies, and Forecasts

- **Comprehensive Energy Plan**
  - Required under statute every 5 years
    - [http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=30&Chapter=005&Section=00202b](http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=30&Chapter=005&Section=00202b)
  - Draft Released in May 2008
    - [http://www.publicservice.vt.gov/planning/CEP%20%20WEB%20DRAFT%20FINAL%206-4-08.pdf](http://www.publicservice.vt.gov/planning/CEP%20%20WEB%20DRAFT%20FINAL%206-4-08.pdf)

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  - Last Released January 2005, draft update in October 2006

- **Governor’s Commission on Climate Change**
  - [http://www.anr.state.vt.us/air/Planning/docs/GCCC%20Final%20Report_pages%201-10.pdf](http://www.anr.state.vt.us/air/Planning/docs/GCCC%20Final%20Report_pages%201-10.pdf)
    - with DPS assisting on the energy policy analysis
Appendix

- Economic impacts analysis (job impacts)

- Economic forecast drivers for energy forecasts
  http://www.economy.com

- Efficiency potential studies to inform efficiency program funding
  http://www.publicservice.vt.gov/pub/aescstudy.html Avoided cost estimates (fuel price projections) for energy efficiency programs screening

- Public/stakeholder engagement
  http://www.publicservice.vt.gov/planning/mediatedmodeling.html