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COMMENTS OF ENE (ENVIRONMENT NORTHEAST) TO CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

INITIAL COMMENTS ON CT INTEGRATED RESOURCES PLAN MODELING

October 12, 2011

These initial comments reflect preliminary ideas submitted on September 16, 2011, on potential IRP scenarios and sensitivities to model and some thoughts on assumptions and analysis. We have included policy ideas that could have a significant impact on the electric sector, even if they are more focused on natural gas or thermal heating given the importance of natural gas to the electric system.

More detailed draft comments on demand side management (DSM) issues are attached at the end of this overview.

- **IRP as a Whole** - for the whole modeling effort:
  - Develop a business as usual reference case and high and low fossil fuel prices against it
  - Only include state and federal policies that are final in the reference case (i.e. for DSM no ramp-up to all cost effective, but do include the full RPS and recently finalized rules by EPA)
  - Estimate average total electric and natural gas bills for residential customers at some point in the future for each scenario
  - Include macro-economic modeling of electric sector results to show impacts on CT economy and identify opportunities for economic and job growth
  - Provide some kind of summary environmental indicator (as well as details noted below) for each scenario – i.e. positive, neutral, negative
- **DSM**
  - Scenario: ramp-up EE programs to all cost-effective for both electric and natural gas customers
    - Assumptions and analysis:
      - This ramp-up scenario should be developed and approved by the Energy Efficiency Board (EEB)
      - We suggest the following as a starting point for the EEB
        - Based on KEMA's potential studies, 2008 and 2010 IRP all cost-effective scenarios, and examples from neighboring states (MA & RI)
        - Program cost per kWh and ccf saved should be based on the KEMA study or other similar northeast studies (gas)
        - Assume expanded financing, consistent with best practices achieved in CT and elsewhere, to fund customer portion of costs, with reasonable loan loss reserve and interest rate buy downs paid for by the program – capital from lowest cost source.
    - Other Analysis Guidance:
      - High priority for macro-economic modeling
      - Estimate average total bill for residential customers at some point in the future
- **Natural Gas & Thermal Energy**
  - Scenario: Natural gas leak detection and maintenance program to reduce methane emissions (GHG)

    - Assumptions and analysis:
        - Quantify gas delivered to CT company distribution systems vs. metered/delivered at homes and businesses and the lost revenue and GHG emissions
        - Look at EPA Gas Star for examples of costs to improve the system
    - Other Analysis Guidance:
        - Quantify economic and GHG benefits
        - Feed changes into gas demand into electric/gas sector model(s)
- Scenario: Expansion of the natural gas network
    - Assumptions and analysis:
        - GIS and spreadsheet analysis to assess the potential for build out with limited main extensions (connect customers that are already near gas)
        - Examine a range of scenarios in terms of who is paying for the connection (shareholders, new gas customer, socialized)
        - Examine impacts of increased consumption on gas and electric prices/costs
        - Expansions should mandate high efficiency equipment if there is any subsidization of connection costs and bundling with connection fee.
    - Other Analysis Guidance:
        - GHGs: look at both direct emissions and indirect emissions (upstream) for natural gas vs. oil and propane as the base
- Scenario: Significant air source heat pump penetration
    - Assumptions and analysis:
        - Assume a reasonable but aggressive penetration rate
        - Assume some level of incentive paid for by electric EE programs
    - Other Analysis Guidance:
        - GHGs: look at both direct emissions and indirect emissions (upstream) for electric vs. oil, propane, and natural gas as the base

- **Transmission & Environmental Policy**
    - Sensitivity: Carbon Cost (sensitivity against all scenarios)
        - Rationale:
            - This is coming: CT Climate Bill requires reductions, improved RGGI in the works, EPA NSPS regulations, and potential federal legislation down the road
            - This is required to give policy makers a sense of the most cost-effective options given the need to reduce GHG emissions
        - Assumptions and analysis:
            - Ramp-up to around $40-60/ton consistent with federal modeling of comprehensive climate bills like Waxman-Markey
            - Run as a sensitivity against all scenarios
    - Scenario/Sensitivity: Quantify Environmental Impacts
        - Assumptions and analysis:
            - For all scenarios and sensitivities report emissions of major pollutants including GHGs and NOx during peak demand days
            - Avoided health costs or alternate compliance costs for criteria pollutants
    - Scenario: Expanded retirement of old power plants
        - Assumptions and analysis:
            - Per DEP requests last year, retire older plants and examine air emissions benefits annually and during peak days
    - Transmission and NTA Scenarios:

- 1) Solve all Reliability Problems with transmission (wires) solutions
  - Assumptions and analysis:
    - Use ISO RSP and TX Queue as the starting point
    - Present the results 2 ways if CT had to pay 100% of the cost and if costs are socialized using the ISO tariff formula
    - Present total costs and rate and bill impacts
    - Assume TX built by utilities w/ current ROE
- 2) Address Reliability w/ Non Transmission Alternatives (NTAs, non-wires)
  - Assumptions and analysis:
    - NTAs: assume use of both targeted DR and efficiency at slightly elevated program costs to account for the need to deliver more in smaller areas
    - Present the results 2 ways if CT had to pay 100% of the cost and if costs are socialized using the ISO tariff formula
    - Present total costs and rate and bill impacts
    - Assume NTAs built by utilities w/ current performance incentive and again with TX ROE level as the incentive
- 3) Address all Reliability w/ a TX and NTA mix
  - Same as above

- **Renewable Energy**
  - RPS Scenarios:
    - Scenario 1: RPS compliance through spot market REC purchases (customers pay for wholesale energy and RECs – no price hedge against higher energy prices, given the New England wide demand, assume cost at or close to ACP)
    - Scenario 2: Majority of the RPS compliance through long-term energy and REC contracts (have model build and select sources and transmission interconnection costs based on current estimates, provides customers a price hedge, could either be on behalf of all customers or a contract for differences with energy re-sold into the market)
  - Hydro Contracting Scenario
    - Reasonable quantity of HQ power over Northern Pass (based on all-in costs for energy and transmission)
    - Not RPS compliant – this is a mature technology that should not need an incentive/premium (Note, with a high energy price and carbon price sensitivity this should look more favorable as a hedge against higher energy prices and potential higher carbon prices)

2012 IRP: DSM Stakeholder Session Preliminary Comments

September 2011

ENE (Environment Northeast) appreciates the opportunity to explore with DEEP and CEAB the IRP scenarios to be modeled at this early stage. ENE values the collaborative and inclusive nature by which DEEP has proposed to proceed in the 2012 IRP. ENE believes that all modeling should reflect conscientious and sound policy decisions. In light of various mandates and goals established by the legislature such as the Global Warming Solutions Act, the overarching modeling effort should contain a carbon cost in the avoided cost analysis to aid in the comparison among various resources.

ENE, therefore, suggests the following modeling considerations for the Brattle Group's analysis for the DSM portion of the 2012 IRP.

- All achievable cost effective energy efficiency and the Energy Efficiency Board: A-ACE, the moniker this scenario received in the past, should be modeled with significant direction and input from the Energy Efficiency Board (EEB) and its consultants. The EEB and consultants, along with the electric distribution companies (EDCs), are responsible for authoring, reviewing, and implementing the annual conservation and load management plan. The EEB, its consultants, and EDCs are familiar with the opportunities and challenges for efficiency, including both rebate/incentives programs and efficiency financing, in Connecticut for all sectors. Therefore, with the expertise and experience of the EEB, its consultants and EDCs, modeling of A-ACE should assume full funding for rebate/incentives programs as well as robust financing programs modeled at reasonable and achievable levels.

  The A-ACE strategy should be consistent with the results of the KEMA Potential Study for the electric sector, conducted on behalf of the EEB, and as the entity responsible for directing efficiency program decisions for over a decade in Connecticut, the EEB, with its consultants, should be responsible for directing the development of the A-ACE scenario. However, as PA 07-242 did not limit the IRP exploration to the electric sector, efficiency for all fuels should also be modeled. DEEP and other participants should look to, in conjunction with KEMA's Connecticut Natural Gas Commercial and Industrial Energy Efficiency Potential Study (released in 2009 and conducted on behalf of the EEB), other states that have conducted similar studies, for example, "The Opportunity for Energy Efficiency that is Cheaper than Supply in Rhode Island" conducted on behalf of the state's Energy Efficiency and Resources Management Council (*see* http://www.ripuc.org/eventsactions/docket/4202page.html), and "Assessment of All Available Cost-Effective Energy Efficiency and Combined Heat & Power (CHP): Preliminary Assessment" conducted on behalf of the Massachusetts Energy Efficiency Advisory Council (*see* http://www.ma-eeac.org/docs/090609-Assessment.pdf; *see also* http://www.ma-eeac.org/docs/090714-AssessmentFinal.pdf).

  DEEP should explore the various approaches selected by the EDCs to develop the A-ACE cases in the 2008 and 2010 IRPs, but should avoid modeling a scenario comparable to the 2010 IRP's Targeted Strategy. The Targeted Strategy selected four narrowly focused programs that did not address the majority of savings opportunities identified in the KEMA Potential Study and would restrict the customer base; in particular, limited income and small business customers would have seen very little direct benefit from the Targeted Strategy initiatives. Moreover, focusing on scenarios that, for example, "cream skim" fails to promote sound policy because such a selective approach ignores the EEB's longstanding tradition and goals of ratepayer class equity and comprehensive building treatment.

ENE advocates for continued modeling of A-ACE, with an emphasis on comparing the total costs and benefits against, especially, energy resources. PA 07-242, Section 51(b) required the IRP assessment to include:

> (1) the energy and capacity requirements of customers for the next three, five and ten years, (2) the manner of how best to eliminate growth in electric demand, (3) how best to level electric demand in the state by reducing peak demand and shifting demand to off-peak periods, (4) the impact of current and projected environmental standards, including, but not limited to, those related to greenhouse gas emissions and the federal Clean Air Act goals and how different resources could help achieve those standards and goals, (5) energy security and economic risks associated with potential energy resources, and (6) the estimated lifetime cost and availability of potential energy resources.

(Quoted portion unchanged by PA 11-80.)

Resources for electricity must be defined to include both energy and capacity costs, as well as the associated fuels used for generation, including coal, gas, and oil. Further, included in the analyses should be both the cost and avoided cost of, for example, transmission and environmental compliance. Program costs per kWh should further be consistent with those in the potential studies.

All scenarios, including those for A-ACE, should contain an estimated average total bill for residential customers at three, five, and ten year projections.

- Macroeconomic modeling of the benefits: In 2009, ENE and the EDR group published the report, "Energy Efficiency: Engine of Economic Growth," quantifying the macroeconomic impacts of increased energy efficiency investments in New England, where efficiency has assumed a leading role in energy policy. The results for Connecticut are shown in Table 1 below. Full report available at http://www.env-ne.org/resources/open/p/id/964.

Table 1: Energy Efficiency: Engine of Economic Growth
Summary of Connecticut Economic Impacts

	Electric	Natural Gas	Unregulated Fuels
Total Efficiency Program Costs ($Billions)	4.4	.93	1.6
Increase in GSP ($Billions)	25	6.6	12
Maximum annual GSP Increase ($Billions)	1.37	0.41	0.65
Percent of GSP Increase Resulting from Efficiency Spending	11%	10%	8%
Percent of GSP Increase Resulting from Energy Savings	89%	90%	92%
Dollars of GSP Increase per $1 of Program Spending	5.7	7.0	7.1
Increase in Employment (Job Years)	183,000	42,000	78,000
Maximum annual Employment Increase (Jobs)	9,700	2,700	4,600
Percent of Employment Increase from Efficiency Spending	15%	14%	11%
Percent of Employment Increase from Energy Savings	85%	86%	89%
Job-Years per $Million of Program Spending	41	45	48

ENE's study used the REMI model and, unlike other studies, explored economic growth attributable to, for example, customer energy bill savings and beyond simply the "green jobs" related to installing efficiency measures, which account for only 10-15% of the job growth. A comparative analysis of the macroeconomic impacts of efficiency investments, and those related to the investments in other energy and capacity resources, can clarify the true costs and benefits to the State of each resource and capacity option.

We recommend that similar macroeconomic modeling be conducted for this and other IRP scenarios.

- Quantifying environmental benefits in dollars: The 2010 IRP explored the environmental benefits of the A-ACE scenario, and this should be done again. However, absent were the dollar value savings associated with environmental benefits of reduced energy consumption. PA 07-242 required the assessment of "the impact of current and projected environmental standards, including those related to greenhouse gas emissions and the Clean Air Act goals, and how different resources could help achieve those standards and goals" (Sec. 51(b), portion unchanged by PA 11-80). Further, while NESCAUM modeling on the Global Warming Solutions Act is not yet available, ENE anticipates that energy efficiency will be a top priority for achieving GWSA mandates.

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ENE (Environment Northeast) is a nonprofit research and advocacy organization focusing on the Northeastern United States and Eastern Canada. Our mission is to address large-scale environmental challenges that threaten regional ecosystems, human health, or the management of significant natural resources. We use policy analysis, collaborative problem solving, and advocacy to advance the environmental and economic sustainability of the region.