Coventry Town Council & Board of Education  
Joint Special Meeting Minutes  
January 13, 2020

1. Call to Order/Roll Call: Julie Blanchard called the meeting to order at 6:34 pm. Present were:  
   Town Council: Julie Blanchard, Matt O'Brien, Richard Williams, Matt O'Brien Jr., Lisa Thomas, Jon Hand, Lisa Thomas  
   BOE: Jennifer Beausoleil, Mary Kortmann, Gene Marchand, Christina Williams, Robert Williams  
   Staff: John Elsesser, Town Manager; Amanda Backhaus, Finance Director; David Petrone, Superintendent of Schools; Bob Carroll, BOE Business Manager.  
   Also in attendance: Chuck Brody, John O'Brien, and Pat Early from Coventry Microgrid, LLC.

2. 19/20-35 – Microgrid Project Update:  
   Chuck Brody presented a power point presentation. Presentation has been attached to the minutes.  
   Mary Kortmann asked if we ever got an answer about the rate the Town will pay for the gas for our boilers. Chuck noted we looked into that and the Town is not eligible for the bulk rate as it is a separate meter. Christina Williams asked if the battery was only used as the back up power source. Chuck noted the battery may also be used during on-gird times and that we will use the CHP to offset the need to purchase energy. In an outage the battery is the initial source of power. John Elsesser noted the high school is the only building with demand charges - which the battery should be able to significantly reduce by producing 90% of the electric needs. Christina asked about the lifespan of batteries. Chuck noted the warranted lifetime of the battery was between 10-15 years but he thinks they will have capacity for 20 years based on the manner in which they are planned to be used used. John Elsesser noted the maintenance of the plant is not the Town's responsibility. Gene Marchand asked if EverSource can redesign the rules in a way that we would not see the planned benefit. John O'Brien noted EverSource is always trying to change the rules and it is unknown of what will happen in the future. Chuck noted the Town was doing a good job decoupling their reliance on EverSource to put themselves in a better place for the future. Richard Williams asked how the heat is getting into the schools and is that part of the cost? Chuck noted the original assumption was that we were only supplying heat to the high school. As the design has progressed and additional information has been obtained, we determined it is useful to evaluate also supplying heat to the middle school. This is still being evaluated at this time to see if the benefit is worth it to put in a second loop. Matt O'Brien asked if the contract will include all of these factors and what will happen if the actual outcomes produce different results than the assumptions in the contract? Chuck notes that the contract is still being drafted and that will need to be taken into consideration in the contract wording. John O'Brien noted generally in a PPA there is something in the appendix to address if the contract does not perform as planned.
The Town Council and Board of Education thanked Coventry Microgrid LLC for their presentation.

3. **Adjournment:** Matt O’Brien moved to adjourn, seconded by Jon Hand. The meeting was adjourned at 7:09 pm.

Respectfully Submitted,

[Signature]

Amanda L. Backhaus, CPA
Finance Director

*Note: These minutes are draft/not official until approved by the Council at the next Council meeting. Please see subsequent meeting for approval or changes to these minutes.*
Coventry Microgrid Update
January 13, 2020

Coventry Microgrid, LLC
Microgrid Overview

- DEEP defines a microgrid as an integrated environment of local generation resources, buildings/electrical loads, and coordinated controls that can operate in parallel with or in isolation from the utility grid
  - Includes at least 2 buildings sharing common resources and controls
  - Supports at least 4 days of continuous service with local energy sources (generator, PV, storage)
  - Supports at least 19 days of continuous service with fuel resupply within 10 miles
  - Supports 120% of “critical load” of the in-scope facilities (varies by building)

- Parallel Operating State
  - Utility and microgrid both provide energy to serve load - Grid is controlling entity
  - Point of Common Connection (PCC) is established - microgrid outer boundary

- “Islanded” Operating State
  - Electrical supply is 100% isolated from utility - Local control must be established
  - Automatic disconnect (breaker/relay) at every PCC
  - Orderly pre-defined sequence of operation to balance local generation and serve load
  - Orderly transition back to parallel operating state when utility service is restored

*Utility tariffs dictate permission & rate ($/kWh) to export microgrid generation surplus*
Microgrid Design - Shared Generation Concept

Aggregating electrical service and load during on-grid operation to improve Combined Heating and Power (CHP) performance, Battery Energy Storage System (BESS) and waste heat recovery and associated overall utility costs.
CHP Overview

**Combined Heat & Power (CHP) Generation System**

- Natural gas fueled small to mid scaled generation system
  - Located on site
  - < Megawatt power rating
- Delivers both Electricity (kW rating) and Heat (BTU rating) to *connected* facilities
- Continuous operation subject to fuel supply
- Multiple applications of Heat energy (Recovered waste heat)
  - Augment HVAC for heating and cooling. (cooling not in current scope)
  - Secondary electrical generation (not in current scope)
Energy Storage Economics

Battery Energy Storage System (BESS)

- Reduce Utility Demand Charges that represent 20% - 60% of typical commercial and municipal electrical expense
  - Calculated based on 15 or 30 minute peak kW each month, which usually are infrequent and short duration, and can occur anytime in 24 hour cycle
  - Discharge battery to offset a percentage of peak = $ savings

- Enable/expand participation in Utility Demand Response program
  - Discharge battery in response to utility request
  - Separate monthly revenue for committed capacity and fulfilled requests

- Participate in regional grid operator (ISO-NE) market(s)
  - Additional annual revenue opportunity comparable to demand charge reduction
  - Pursue in future (2021)
Status as of January 10

- **Contract between CT DEEP & Coventry Microgrid, LLC Executed**
  - Effective as of 25-Sept-2019
  - Commits state funding of $4 Million for qualifying project expenses

- **Local generation engineering design pending Eversource review**
  - Microgrid circuit routing options & interconnect previewed with Eversource
    - Orchard Hills interconnect conversion from single to 3 phase primary
  - Petition being prepared for PURA declaratory ruling re microgrid electrical generation & distribution
  - CHP generation profile revised to reflect aggregated load projections
  - Kick-off for Eversource Impact Study requested

- **Critical path milestones still pending (direct PPA impact)**
  - Eversource Interconnect Agreement (infrastructure design & ownership)
  - Finalize project finance partner(s) and terms - 3 candidate partners
Microgrid Cost & Benefit Discussion

*Multiple community stakeholders will see benefits across one or more categories as a result of shared investment in infrastructure and operating costs.*

<table>
<thead>
<tr>
<th>Public Services resiliency during grid outages</th>
<th>Favorable aggregate impact to Town budgets</th>
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<tbody>
<tr>
<td>• First responders &amp; communications</td>
<td>• Electricity expense (PPA &amp; demand charges)</td>
</tr>
<tr>
<td>• Shelter in place (Orchard Hills)</td>
<td>• Heating expense (CHS &amp; CNH)</td>
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<tr>
<td>• CHS, CNH, ELC continued operation</td>
<td></td>
</tr>
<tr>
<td>• Town Administration</td>
<td><em>Municipal KPI: Annual aggregate cost of electricity plus heating not to exceed aggregate current budget</em></td>
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<tr>
<td>• Board of Education Administration</td>
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<tr>
<th>Environmental impact</th>
<th>Reputation as an innovator</th>
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<tbody>
<tr>
<td>• Increased solar PV contribution (OH)</td>
<td>• Multi-facility municipal microgrid</td>
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<tr>
<td>• Carbon savings for heating (CHS CHP thermal recovery)</td>
<td>• Hybrid local generation (CHP, Solar, BESS)</td>
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<td>• Reduce / avoid reliance on stored fuels</td>
<td>• Collaborative budget appropriations</td>
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<tr>
<td>• Future additional CHP thermal recovery</td>
<td>• Early achiever with DEEP grant program</td>
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Revised Program Timeline

Contracts & Financing schedule extended by CT DEEP contract delay.

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<tr>
<th>Organization Activity Focus</th>
<th>Project Team</th>
<th>Town Stakeholders</th>
<th>CT DEEP</th>
<th>Finance Partner</th>
<th>Eversource</th>
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<tbody>
<tr>
<td>Financial/Legal</td>
<td>X</td>
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<tr>
<td>Engineering</td>
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<td>Construction</td>
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<td>Operations</td>
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Unresolved Cost Drivers

Multiple factors remain to be settled that influence infrastructure CAPEX, operating costs, and project financing.

- **Engineering design depends on Eversource Impact Study**
  - Microgrid circuit routing options & interconnect
  - Orchard Hills interconnect conversion
  - Demarcation of “franchise” and microgrid circuit ownership
    - Operating costs & liability if not Eversource
    - Exposure to wholesale tariff during outage (riding Eversource infrastructure)

- **Pricing & lead time fluctuations on generation assets**
  - Solar PV & Energy Storage - Unit prices decreasing, but tariffs increasing

- **Finance requirements & negotiable terms (direct PPA consequence)**
  - Finalized project cost (CAPEX & Labor) in excess of DEEP Grant
  - Cash-flow management pending disbursements from DEEP Grant
  - Project & Asset Ownership - assignment to finance partner
Next Steps

- **Engage Eversource Impact Study**
  - ID & resolve technical, legal & tariff uncertainties
  - Draft Interconnect Agreement

- **Submit petition for PURA Declaratory Ruling**
  - Town is party of record as current affected customer

- **Finalize project finance partner and term sheet**

- **Initiate contract drafts between Town/Board of Education & Coventry Microgrid, LLC**
  - ID necessary counterparties & separate documents
    - Exhibit for PPA pending final calculation
  - Target completed documents by end of February
Thank you