Boulder's Energy Future Municipalization Exploration Project
Reliability Working Group Meeting
November 8, 2012, 7:00 p.m.
1777 Broadway St. – Municipal Building
West Conference Room (1st Floor)

(7:00 – 7:30) **Introductions and Purpose**

Discuss Purpose and Scope Document

City Reps:
Bob Harberg (BH)
Kathy Haddock (KH)
Andrew Barth (AB)

Independent Facilitator: Heather Bergman (HB)

Work Group:
Burrell Eveland (BE)
Pete Baston (PB)
Jim Look (JL)
Warren Wendling (WW)
Roger Koenig (RK)
Jack Mason (JM)

Introductions –

- WW – Professional engineer –Boulder distribution systems engineering – PUC 24 yrs (2005) as Chief Engineer – Now private sector working with transmission interconnections
- JL – IEEE – Lifelong energy industry – System planning – Engineering deg and MBA – Oil and gas – project manager – Ops – Planning – Exec Mgmt – RAMCO Saudi Arabia – Offshore oil operations – Gas turbine ops – Retired in 03 – Moved to Boulder – non-profit – IEEE vp of professional activities
- RK - Adjunct prof at Michigan State U – research on clean energy – DC representation – CU Law student clinic re: FERC reliability standards against geomagnetic disturbances –
- PB – New to Boulder from Santa Fe – Originally from Rhodesia – MBA – Civil Engineering – Philosophy – Problem solver – Hydroelectric specialist – Quality Assurance and Best Practices for major corps – Real world modeling not just on paper – Digital – Imaginative –
- BE – 28 yrs with LA Water and Power operator, – Now WAPA instructor dispatcher
- JM – 40 yrs in energy industry – consultant in electrical industry – generation – design power plants and safety and reliability – maintenance programs – utility restructures – Carolina – Nebraska – New York – reliability analysis – risk assessment on Nuclear plants – PHD MIT – MBA Mgmt Sloan – Adjunct CU Denver Business – Highly technical – human behavior analysis – portfolio strategy – teaches risk for masters students (deterministic and conventional statistics)

"Black Swan" events (very infrequent but high impact events that aren't visible) using known/unknown/ unknown-unknown –

Purpose and Scope

- Purpose and scope handout explained by HB Bergman
- Separation analysis through consultant, but cannot share full analysis due to confidentiality
    - KH verified
- Separation scope is physical separation to operate full-scale distribution grid, possibly transmission
- JM - are we an independent oversight group, our role is to provide views and information, we will look at engineering work?
    - BH – We're here to inform what needs to be considered in order for staff to make a strategy recommendation to City Council in early 2013
- RK – Are we here to define our work product or has one been defined – Delivery of a report or review of reports?
    - BH – We're here to define what Council will need to make an accurate decision on strategy – may involve creation of report and/or review, we will define as we move forward
- JL – Evaluating reliability as compared to Xcel. Are we to talk about how to do better?
    - BH – We want to look at both scenarios – determine improvements – look at trade-offs – where money should be spent – priorities – we won't make decisions on how money will be spent – alternatives
- BH – we are an independent entity that will take into consideration all information presented – City Council will make the final decision
- HB – Is email dialogue approved?
    - JM – look at materials and send around if you can't attend meetings
    - RK – doesn't want emails and pile ons – IEEE has set up standards that make sure items get taken care of. We should look at how they have done things and mimic their work
    - PB – Base Camp – Open Source project mgmt software – would be a good tool to track ongoing dialogue.
    - RK – need to use best practices for working group meetings
    - JL – Use what the city has established
    - BH – Will investigate city protocol and Base Camp program – will make sure everyone has 7 days prior to a meeting to review all materials and will make sure everyone can meet at a designated time (group asked for best efforts, but not a commitment to get everything as much as 7 days before)
    - RK – must be able to post issues and track and resolve them – will Base Camp do that?
        - PB – Yes Base Camp will track as much as you want, but it isn't highly technical, can be moderated and secured
    - BH will investigate Base Camp with PB and look into web based programs
- DRAFT Documentation
    - RK – who declares final draft?
    - HB – Staff integrates and finalizes until all comments are cleared
    - BH – will bring all opinions to the City Council both consenting and dissenting – will document all opinions
    - HB – Final work would be circulated for comment by group members

- BH – Staff will include all opinions, minority and majority in Final
- RK – We all get a vote on final draft?
- HB – this is not a vote – we want consensus – but do not vote – we must discuss all materials and options that arise in meetings
- BH – keep in mind that if you add complexity, the decision makers will have a more difficult time doing their work – we must at least work towards clarity
- HB – Nothing will be finalized without input from the group, all opinions will heard

Heather doing rules should be inserted?

Timeline:

BH

- Overview next five months
  - Intense negotiations with consultants on separation on reliability next week
  - They will start immediately and have a draft work product by Dec.
  - City will vet internally ASAP
  - Jan 1 – Staff recommendations will be sent to Exec Team for vetting
  - Feb 1 – Document with recommendations for City Council meeting on Feb. 26 that will address all work plan areas
  - This group's due date for final product is dependent on when consultant analysis comes through
    - Will provide 7 days for group review
  - Legal gets all reviews first
  - Tight schedule
  - We're trying to get City Council enough information to determine if we should continue municipalization exploration studies
  - JM – we won't have enough time to vet everything
  - RK – Putting group in jeopardy if we want to put our name on something that isn't fully cleared by the group – don't want to put my signature on anything I don't believe in.
  - KH – Anyone can be subpeoned but this group is not making final decision – Council and staff are
  - HB – let's not get into what we haven't learned yet, you can abstain and put in a dissenting opinion if desired

(7:30 – 8:15) **Considerations and Tasks**

Discuss Considerations and Tasks Document and Working Group Member's related Area of Interest/Expertise

Define Working Group Member Task Assignments

TASK HANDOUT

- Is the list of tasks adequate?
- Provide advice on your specific knowledge areas
- JL – How much info do we have on base case from Xcel?
  - BH – we have basic indices information on Boulder service area, but no component information –

    - RK – Homeland Security is a dangerous area to get into and we must redact information that cannot get into the public domain
        - KH – Yes we can redact if necessary
    - WW – We have information that is available that will help through open indices
- Prior to next meeting
    - BH – Reliability issues for consultants scope of work and other issues we need to address – next 3 to 4 days
        - Other resources that you know of that we can use that relate to reliability
            - Provide w/in next 2 to 3 weeks
    - Brainstorm what's missing on task lists
    - Volunteers for additional thoughts on tasks
    - Provide additional resources that would provide value for consultant's work
    - JL – Reliability measures – Are we looking at day zero, day zero plus a year, longer term?
        - BH – to meet charter we must ensure equal reliability on day one
            - Looking at the future over a 20 year planning period to see what we can do using tradeoffs
        - JL – DAY 0 – Need to look at crews – Try to reduce group's scope
        - WW – The current system needs analysis for redundancy and backfeed availability – will not be exactly the same system Xcel is currently using –
        - JM – Charter requirements (Can we) vs. Should we – how can you avoid looking at day 1 vs. Day 2 – What's feasible and what could unfold over the first year? Uncomfortable with separation.
        - PB – We need to look high-level – who's running it – first thing people look at is the personnel running the utility
        - HB – Who's running it and reliability when it is started– two issues for consultants
        - BH – our group must evaluate that as well and add these things to the consultant's scope of work
        - BH – We may need to reduce our task list to those that are most critical
        - BE – Complications – what level voltage do we separate at? – Lower than 100 KV reduces tasks – Over 100 KV adds another set of issues – Drawing of LA power grid example – Showing how much power is coming in and where – must view all of the current system – there are different inputs that create a full grid – Lack of MegaVar – Reactive power causes outages – La
        - WW – Generation and the planning reserve margin – NERC or WEC requirements has an object of 15% - Need to have 16.3% margin – Resource Mix group – will work on the end
            - Distribution system – no equivalent for NERC or WEC – just good utility practice – risk analysis – design to minimize customers effected during outage –
        - WW provided a rough outline of general generation to transmission to distribution system and also roughly sketched Boulder's distribution and transmission system on a white board
        - WW spoke about how power is supplied to the Boulder grid, where it comes in and how it is transmitted and distributed.
        - WW spoke about Xcel's redundancies for the Boulder grid
        - RK – Boulder would be an island inside Xcel's system and Xcel would be under obligations to serve us?

- WW – We could become a network integration customer and buy locations on Xcel's network
- WW – Operations – You're going to need an operations center in Boulder for electricity just like a water utility. A place to isolate outage impacts. Xcel's control center is down in Lookout near Golden
- WW- Need to make a distinction where we don't overlap or how we overlap with resource working group
- HB – What do we need to add
    - Define the line between resource group and reliability group
- WW – CLEAN AIR CLEAN JOBS – transmission issues were not addressed
- WW – Must look at Resource group's scope vs. Reliability group's scope and how they overlap
- HB – May need a joint meeting between groups to clarify and inform process
- RK – Top down from Generation to transmission to distribution – separation issue – you lose current design from Xcel – Demarkation issue – what are we studying and reporting –
- PB – We need to push towards and executive decision to provide input on others
- RK – In domain vs. Out of domain label for groups
- JM – We don't dig into everything but we must be cautious about making our job too easy
- WW – Who's going to operate and what does the operations and maintenance (O&M) structure look like, #'s of people, trucks, etc.
- JM – We're not producing tech docs, we're just here to say what's missed and if what is there is adequate
- BH – We will develop O&M plans – you will analyze those plans for reliability
- WW – Consultant – ask them how they came to their assumptions are they verifiable
- HB – Define the work of the engineering consulting firm
- RK – Is some of what we're doing going towards the RFP? YES
- HB – look at the scoping list and tell us what's missing – refine the direction
- JM – Add to rules – unknown – consider we are dealing with events doesn't mean we don't budget for them – we still need to look at Black Swan – Infrequent or low probability/high impact – must be addressed –
- WW – We only talked about one scenario – engineers must think about what ifs? Multiple scenarios –
- BH – How will the city ensure reliability and how far we dig into disaster scenarios – Looped systems criteria – Redundancy requirements – common mode failure
- RK – Where are the annexed redundancies – how close – how hard would it be to restore after different types of disturbances –
- WW – NERC has these scenarios set into their assumptions/reqs – what is an acceptable level of reliability?
- RK – Plan for what we know we have – blizzards, fires, hail, electrical storms, slides, other known disasters – Focus – Bring city emergency plans – from OEM
    - BH will provide to the group
- JM – reliability study - what's the objective? Customers vs. ability to recover entire system at a much larger level. FEMA controlled

- ADD - Quality of crews and financial resources –
    - Human issue is going to be the biggest because it's a new system – huge learning curve for the new electric utility– JL
- HB
    - Review the entire list of reliability considerations and tasks and email BH changes by next Monday and people can copy others
    - BH will supply OEM link
    - RK will provide another _____?
    - Provide input on other resources and BH will provide to consultants
    - Xcel's IRP through PUC
    - BH will update group on consultant's scope of work, timeline and deliverables
    - BH will send RFP sent to consultants
    - Website will be updated as non-confidential information is available
    - PB will send info about Basecamp
    - JL – virtual meetings? –
        - BH = webEx – BH will look into

(8:15-8:30) **Next Steps**

Confirm Next Meeting - Wednesday, December 5, 2012, 7:00 p.m.