RePower Humboldt

Humboldt RESCO Task 5 Memo: Regulatory and Political Issues – Challenges to Implementing the RePower Humboldt Strategic Plan

February 2013

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TASK 5 MEMO
Regulatory and Political Issues – Challenges to Implementing the RePower Humboldt Strategic Plan

The RePower Humboldt Strategic Plan has identified tremendous opportunity for developing local renewable energy resources, reducing greenhouse gas emissions and creating local jobs, and the plan has garnered general support within the community. However, the devil is in the details; there are many obstacles that will need to be overcome in order to realize the RePower Humboldt vision. This memo discusses various regulatory and political issues. It outlines a set of key challenges and suggests strategies for overcoming these challenges. Note that many of the issues outlined below are addressed to some extent in the other RePower Humboldt documents. See the RePower Humboldt website (http://www.redwoodenergy.org/programs/repower) for additional information.

Key Challenges

1. **Onshore wind power – siting challenges, key resource is located in an Audubon Society designated Important Bird Area (IBA).**
   Onshore wind power has been identified as a substantial renewable energy resource. One key challenge with development of the local wind resource will be siting. The prime wind resource, with much rated at Class 5 or better, is in the Cape Mendocino area, and the majority of this area has been designated an Important Bird Area (Cape Mendocino Grasslands) by the Audubon Society. While the Audubon Society "strongly supports properly sited wind power as a clean alternative energy source that reduces the threat of global warming," they typically do not support wind energy development in areas designated as Important Bird Areas.

   Bear River Ridge is the most accessible ridge in the Cape Mendocino Area and was recently the tentative site of a 50 MW wind farm proposed by Shell WindEnergy. Shell chose not to pursue the project due to "unfavorable market conditions and issues pertaining to the transportation logistics." This site is likely the best possible location in the Cape Mendocino area because it has the best road and electrical transmission system access and because it is on the boundary of the Audubon's Important Bird Area. However, the Bear River Ridge site received strong opposition from the residents of Ferndale, one of the closest local communities.

   One potential approach to overcome these challenges is to conduct a constraints and opportunities analysis that identifies preferred areas for wind energy development, as well as areas that are not compatible. This could be followed by a program level environmental review. These efforts could identify the best areas for development, assess key issues that need to be addressed, and hopefully prepare the community for the next proposed wind energy project.

2. **Wave and offshore wind power – immature technologies, regulatory/permitting hurdles.**
   Wave and offshore wind power offer substantial development opportunities. Key challenges with development of these resources are the commercial immaturity of the technologies and the substantial regulatory and permitting requirements that need to be addressed. While onshore wind power is a mature industry and offshore wind has been substantially developed in Europe, offshore wind is relatively new in the US. Also, the early offshore wind efforts in the US are on the eastern seaboard where water depths are much more shallow. Deploying offshore wind turbines on the west coast of the US will be a greater technical

challenge. Wave energy technology is also immature, with only a few demonstration/pilot projects deployed throughout the world.

PG&E recently proposed a five-year, 5 MW wave energy demonstration project off of Humboldt Bay (WaveConnect™). After a few years of study and project development work PG&E withdrew its license application and discontinued the WaveConnect™ project for the following reasons: permitting issues were more challenging and more costly than originally anticipated, the cost of project development was much greater than originally estimated, and the cost-competitiveness of wave power was uncertain and would require significant additional investment in design, testing and demonstration to improve designs and reduce costs (PG&E, 2011). PG&E also noted "The high costs of licensing and permitting do not currently justify pursuing the limited licenses available through FERC's expedited Pilot Project Licensing Process (PPLP). Until more experience is gained with wave power technologies, FERC's Integrated Licensing Process (ILP) may be a more efficient way to pursue hydrokinetic projects."

Because these offshore renewable energy technologies are immature, they pose more uncertainties and potential challenges, including greater regulatory and permitting challenges and uncertainties. It is important that streamlined permitting process be allowed for early stage research and development.

One role that Humboldt County can play is as a venue for future offshore renewable energy research and demonstration. The Samoa Peninsula, where the PG&E WaveConnect™ project had proposed it's onshore support infrastructure, is a perfect location to host these R&D efforts. The area is primarily zoned industrial general and industrial coastal dependent, has excellent port access and access to suitable electrical transmission infrastructure. One particular site, the defunct Samoa pulp mill, is being considered for repurposing and could host facilities for offshore energy research.

3. **Forest biomass – need coordination with forest restoration & management, need to share benefits and costs, need to determine sustainability and secure public acceptance.** Biomass is the dominant renewable energy resource currently being utilized in the area and has potential for expansion. However, it faces numerous challenges. Among these are the ability to coordinate biomass energy with forest restoration and management priorities, the need to determine what are considered sustainable practices that can gain public acceptance, and the ability to share costs and benefits across multiple stakeholder groups.

   Locally and beyond there have been concerns raised about the growth of the biomass energy industry and its potential impacts on forests. Some are worried that forests will be cleared to keep power plants going. However, there is also a consensus among many in the forest restoration and sustainable forestry community that fuel reduction treatments and forest thinning is needed to reduce fire hazards and to maintain healthy forest ecosystems. These management practices are costly. However, if the residue from these efforts is used for biomass power production the added value can help offset the treatment costs.

   For these reasons there is a need for coordination between the biomass energy industry and the forest restoration/management community. We need to work out ways to share costs and benefits across these areas. In addition, guidelines need to be developed regarding acceptable practices that will ensure the sustained health of our forests. If the biomass energy industry and the forest restoration community can work toward consensus on these issues it would go along way toward securing public acceptance for an increase in biomass energy production.

4. **Forest biomass – uncertainty regarding renewable status, carbon neutrality and ash disposal issues.**
In addition to the issues cited above, biomass energy also faces regulatory uncertainties on a state and national level. This includes questions regarding how biomass energy is treated with regard to its status as a renewable energy resource and a carbon neutral resource. Traditionally biomass has been considered carbon neutral and renewable. However, this treatment has recently been under intense scrutiny. There is an ongoing debate regarding the carbon neutrality of biomass energy (Zeller-Powell 2011). It is a complicated question, and one whose answer depends on many details. Without a renewable and carbon neutral designation biomass will have a hard time competing economically as an energy source.

   Beginning January 2011 greenhouse gases, including CO_2, became a pollutant subject to regulation under the federal Clean Air Act and the USEPA began a program for permitting greenhouse gas emissions from the largest stationary sources, including bioenergy-based electric generating units. However, EPA issued a three-year deferral covering all sources of biogenic CO_2 emissions as the controversy over carbon emissions from biogenic sources is reviewed. In the meantime, the state of Massachusetts established strict criteria regarding treatment of biomass as a renewable resources depending on power plant efficiency, soil characteristics, biomass sources and carbon accounting. While these restrictions are particular to forest conditions in the Northeast, conditions that are very different from those in the Pacific Northwest, there is a fair chance that some sort of criteria may be established in California that restricts the treatment of biomass energy as renewable. This uncertainty poses a challenge to the biomass industry.

   These issues should be carefully followed. In addition, it would be useful to conduct a study for the North Coast region that assess biomass resource availability, energy conversion pathways and associated lifecycle impacts with regard to carbon emissions.

   One other issue that has recently been raised is potential environmental impacts associated with disposal of fly ash and bottom ash from biomass energy facilities. This ash is typically used as a soil amendment to enhance crop production by raising pH (liming) and is sometimes used to create loafing beds for cows on dairy farms. Concerns about contamination from metals and dioxin have been raised and the North Coast Regional Water Quality Control Board is currently reviewing the issue. Currently this is an informational item and no recommendations have been proposed by Board staff (Bernard, 2012).

5. **Distributed generation – potential permitting hurdles, interconnection challenges, and inadequate pricing for power sales.**
Distributed generation (DG) can play an important role in meeting local energy needs. It has the advantage of mainly providing retail value for electricity generated and can make use of waste heat on-site where applicable. This provides added value and improves economic viability. However, DG faces numerous challenges as well, including potential permitting hurdles, interconnection challenges, and obtaining adequate prices for wholesale power sales back to the grid.

   One of the most common renewable DG resources is solar photovoltaic (PV). Provided there is adequate area and solar access this resource is being utilized by large commercial and industrial facilities throughout the state. However, in the Humboldt Bay area where the majority of the large commercial and industrial development is centered on the North Coast, the solar resource is about 20% to 30% less than the rest of the state. This makes for longer paybacks for PV systems on the North Coast. Nonetheless, a large number of systems have been installed and this is testament to the strong interest in the region.

   Other DG opportunities on the North Coast could include small wind systems, small biomass systems, and combined heat and power. All of these technologies could face permitting

hurdles since they are not commonplace (as PV has more or less become). When planners and building code officials are faced with uncommon technologies permitting can be a slower, more arduous task. This challenge can be addressed by working with these municipal staff to educate them about DG technologies and provide them with lessons learned in other jurisdictions where similar system have been installed. In addition, zoning regulations can be modified to specify the allowance of DG technologies as a permitted use where appropriate. A great example of this is proposed zoning code amendments in Sonoma County (County of Sonoma, 2012). Interconnection and adequate pricing mechanisms can also be challenging for DG, though these issues continue to be addressed by state policy makers at the CEC and CPUC, as well as within the State legislature and the Governor's office.

6. **Small hydroelectric – major regulatory/permitting hurdles, T&D access issues, need to identify prime sites where environmental and T&D issues are minimal.**
Small, run-of-the-river hydroelectric systems offer another renewable energy development opportunity for the North Coast region. However, in order to be eligible for renewable energy status small hydroelectric facilities must not "cause an adverse impact on in-stream beneficial uses or cause a change in the volume or timing of stream flow."[1] In addition, development of these resources will require rigorous permitting and regulatory approval from federal (i.e., Federal Energy Regulatory Commission) and state agencies. Another key issue for small hydro is access to transmission lines. These resources are often situated in remote areas with now electrical infrastructure and no local demand, and installing the infrastructure needed to transport the power adds substantial costs and development challenges.

   One approach to reducing these barriers would be to conduct an assessment of the small hydro resources in the region. This assessment should draw on past work (Oscar Larson and Associates, 1982) and should include: identification of streams with adequate flow and head, identification of streams with natural barriers to anadromous fish passage where all hydroelectric infrastructure can be located above these barriers, and identification of sites will good access to transmission and distribution infrastructure.

7. **Pricing issues with existing PURPA contracts (biomass, small hydro).**
Existing renewable energy power plants in the region (biomass and small hydroelectric) that currently sell power to PG&E under previously negotiated PURPA contracts have found or are finding themselves in a situation where the price they receive for wholesale power sales is not sufficient for sustainable operation of their facilities. One local biomass plant (the Scotia power plant owned by Greenleaf Power) recently curtailed operation due in part to contracting and energy pricing issues with PG&E. They have worked with PG&E and the CPUC to resolve these issues and are tentatively planning to restart their facility later in 2013. The Humboldt Bay Municipal Water District owns and operates a 2 MW hydroelectric powerhouse at Matthews Dam on Ruth Reservoir. They are also facing challenges to obtain adequate wholesale pricing for their power. Potential solutions to this issue include successful negotiations with PG&E and the CPUC to allow these plants to continue operating, or alternative buyers for their product who might pay a higher price (e.g., via direct contracts, Community Choice Aggregators, or other utility buyers).

8. **Transmission and distribution system upgrades – high cost of upgrades and need for long-term planning. How can the local community participate in the T&D upgrade discussion? How will upgrades be funded?**
As part of the RePower Humboldt study, PG&E conducted an Interconnection Feasibility Study (see Zoellick et.al. 2012, Appendix E and F) that assessed the need for upgrades to the transmission and distribution system if a significant capacity (i.e., 253 MW) of local renewable

[1] Public Utilities Code Section 399.12(e)(1)(A)

energy resources were developed. The analysis found that to comply with North American Electric Reliability Corporation (NERC) requirements substantial upgrades would be needed. Rough costs for these upgrades were estimated to range from $260 million to $1 billion. The lower cost estimate involved a substantial upgrade to the main transmission intertie between the Humboldt Area and the greater CA grid at the Cottonwood substation. The higher cost estimates included upgrades throughout the Humboldt area T&D grid.

The large cost of these required upgrades poses a challenge to wide scale renewable energy development in the area. In addition, the lower cost estimate would require a long-range plan and a commitment to invest in the future. The more likely scenario is that individual projects will be proposed over time, each project will be assessed on it's own terms, and upgrades will be installed as needed to provide for these individual projects. As this process plays out over time it is likely that upgrades and costs consistent with the higher cost $1 billion option will result. To allow for the most cost-efficient T&D upgrades a long-term perspective needs to be considered. This discussion should involve local stakeholders and should include an assessment of how the upgrades can be funded.

9. **Public perceptions include distrust in large multi-national corporations and preference for community-based projects. Challenges include difficulty securing capital and a need for effective local ownership models.**
Throughout the RePower Humboldt planning process a clear desire for participation and control by local stakeholders was voiced. This included a desire for local ownership of renewable energy facilities. In addition, perceptions of mistrust in large multi-national corporations were not uncommon. For example, one argument put forward by opponents of the proposed Bear River Ridge Wind Project was that they didn't trust Shell WindEnergy, a subsidiary of Royal Dutch Shell. There are strategies for improving relations between local stakeholders and outside corporations (see item 12 below). Alternatively, the desire for locally owned, community-based projects could be exploited. The key challenges with this approach will be the ability to secure the required capital, as well as access to effective local ownership models. Effective local ownership models could include Community Choice Aggregation (CCA) or other community renewable energy development models. One prime opportunity is legislation introduced by Senator Wolk (SB 43) that would establish "a shared renewable energy self-generation program that will be implemented in such a manner as to broaden access to self-generation of renewable energy, while fairly compensating electrical corporations for the services they provide."

10. **Lack of consumer choice to buy renewable power, especially locally generated power.**
In addition to the desire to share in the ownership of local renewable energy facilities, local stakeholders also expressed a strong desire to be able to purchase power from renewable energy facilities, especially local facilities. Currently there are very few options that allow electricity customers in Humboldt County to purchase power from renewable energy facilities in excess of what PG&E provides (i.e., according to the RPS standard). Customers can choose to install their own net-metered systems, and in limited cases non-residential customers can participate in the direct access purchase of electricity, which potentially can afford them the opportunity to purchase renewable power. Also, PG&E has submitted a proposal to the CPUC to offer a green power tariff, and this option would provide customers with an additional option. However, PG&E's green tariff would not likely improve people's chances of buying power from local facilities. However, there are other models available such as those mentioned above (CCA and SB 43) that could improve people's ability to purchase power from local renewable power facilities. This would be a welcome development and could do much to promote the use of local resources.

11. **Community concerns regarding local impacts of renewable energy projects and a need for transparent processes that involve the local community in the project planning and development.**
While renewable energy is generally considered to be a more environmentally friendly form of power, all energy generation sources and technologies have some negative environmental impacts. While people often support the general idea of renewable energy development, their support may disappear when a project is proposed in and presents impacts to their community. This was clearly evident in Humboldt County with the recently proposed Bear River Ridge Wind Project. This project was strongly opposed by residents in the community of Ferndale who felt there would be unacceptable impacts to their local community. Perceived impacts included: a disrupted view shed and associated impacts to the tourism industry, potential noise issues, issues with truck traffic through town during facility installation, potential issues with light pollution from FAA beacons, erosion and water quality issues related to road improvements leading up to the ridge, impacts to wildlife, among other concerns. Although many or even all of these concerns could likely have been mitigated, the general consensus in this community seemed to be that the project was not a good idea. To quote one resident, "not here, not now, not ever!"

    Other renewable energy projects, whether biomass, run-of-the river hydroelectric, wave energy or other facilities, will all pose their own local impacts and will likely generate some local opposition. What will be needed to successfully address local concerns is an open and transparent planning and development process that involves the local community in a meaningful way. The PG&E WaveConnect™ project provided an excellent example of a model process for involving the community. The Bear River Ridge Wind Project on the other hand met only minimum requirements for public involvement and did not engage much of the community in a meaningful way.

    According to PG&E, "Given the strong local interest in the proposed WaveConnect projects, lack of a clear regulatory regime governing licensing, and desire to minimize impacts to the environment and socioeconomic resources, PG&E pursued a highly collaborative and inclusive stakeholder engagement process aimed at both local stakeholders and federal, state, and local agencies with a permitting role in the licensing process. The overall goal was to make sure all parties had a trusted and transparent forum to learn about the licensing process and the proposed project and, most importantly, for the development team to clearly understand the issues and regulations affecting the project early enough to substantively address potential issues of concern" (PG&E, 2011). A formal stakeholder group named the Humboldt Working Group was formed. The group included representatives from a broad cross-section of local stakeholders groups; it consisted of about 50 active participants who met approximately monthly with the project development team. See the following web link for more information about the WaveConnect project and the Humboldt Working Group: http://www.pge.com/about/environment/pge/cleanenergy/waveconnect/projects.shtml

12. **All options have impacts, including the "do nothing" option. How does this get accounted for in the review process?**
All energy resources and generation technologies have environmental impacts associated with them, and each project needs to be assessed based on its own potential impacts and merits. When proposed projects are assessed in a formal environmental review process they must be compared with potential alternatives, and one alternative is the no project or no-build alternative. According to the Association of Environmental Professionals CEQA Guidelines (Association of Environmental Professionals, 2011), "If the project is other than a land use or regulatory plan, for example a development project on identifiable property, the "no project" alternative is the circumstance under which the project does not proceed. Here the discussion [of the no project alternative] would compare the environmental effects of the property remaining in its existing state against environmental effects that would occur if the project

were approved. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this "no project" consequence should be discussed." The guidelines go on to say "After defining the no project alternative [], the lead agency should proceed to analyze the impacts of the no project alternative by projecting what would reasonably be expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." In addition, an environmental review must "discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable." When proposed renewable energy projects are being assessed, the cumulative impacts of the no project alternative, including greenhouse gas emissions and other negative impacts associated with conventional fossil fuel based energy systems, should be considered.

13. **Planning, permitting and regulatory hurdles for renewable energy project development: work to streamline the process, identify preferred sites, conduct programmatic EIRs, and establish overlay zones.**
The siting and permitting of large (i.e., 10 MW and above) renewable energy projects (wind, wave, biomass, etc.) can face numerous regulatory and public acceptance challenges. One way to lessen these challenges and streamline the review process is to engage in proactive planning efforts. This can include a constraints and opportunities analysis that identifies preferred areas for development (and areas that are not compatible), followed by a program level environmental review. These efforts can identify the best areas for development and identify and assess key issues that need to be addressed. In addition, guidelines and standards for development can be created, and zoning designations can be made to protect prime areas for future development. This proactive work can help ensure that proposed projects are sited in appropriate locations and can help streamline the review process when an actual project is proposed.

14. **To meet climate change goals we need to address the transportation and heating sectors. This will require ambitious market penetration of PEVs and will be challenging.**
The RePower Humboldt analysis showed that in order to substantially reduce greenhouse gas emissions (i.e. greater than 20% reduction from business-as-usual) low carbon options for transportation and heating fuels would be necessary. One prime opportunity is to switch from fossil fuel combustion based technologies to electric vehicles and heat pumps. In the ***bold*** and ***peak*** scenarios, where greenhouse gas emissions were reduced by 33% and 45%, respectively a 38% penetration of plug-in electric vehicles and heat pumps was assumed. These are very ambitious and arguably unrealistic penetration rates. More reasonable targets for plug-in electric vehicle penetrations over the next 15 to 20 years are likely in the 10% to 20% range, and even these penetration levels will require ambitious policy and planning efforts. Fortunately, the State of California is aggressively promoting adoption of electric vehicles at the state and local levels. This includes funding of a plug-in electric vehicle readiness plan for the North Coast region. This planning effort is currently underway (see http://www.redwoodenergy.org/programs/electric-vehicles).

15. **Need for coordination between regional planning efforts: energy planning, climate action planning, EV infrastructure, etc.**
There are many sustainable planning efforts going on at the state and regionals levels. This includes energy planning, climate action planning, electric vehicle infrastructure planning, and sustainable communities planning efforts. There is a need for coordination between these various efforts, across geographic regions and across government agencies. Coordination can help ensure the most cost effective use of resources with leveraging across various programs and regions and assurance that efforts are not duplicated or at cross purposes.

16. **PG&E Humboldt Bay Generating Station – In the RePower Humboldt *peak* scenario the plant will run at a very low capacity factor, but it will provide critical load following, reserve capacity and reliability benefits. Are there any issues with the plant becoming a "stranded asset?"**
    In the RePower Humboldt ***peak*** scenario 98% of local electricity demand is projected to be met using local renewable energy resources. This means the Humboldt Bay Generating Station (HBGS) would only provide about 2% of electrical energy needs. Nonetheless, it would provide critical load following, reserve capacity, reliability and contingency benefits. This generating station is a critical asset to the Humboldt Bay region. In addition, integration of a large amount of intermittent renewable energy resources, like wind and wave power, would not be possible without the load following capabilities of this plant (or something comparable, such as a large energy storage facility with rapid response capabilities). As progress is made toward implementing the RePower Humboldt plan it will be important to keep in mind the critical value that the HBGS provides to the region and not to view the facility as a stranded asset. If it were considered a stranded asset, what implications would that have?

17. **How does a small community fund the programs and infrastructure needed to develop substantial local renewable energy resources?**
    The instant capital costs associated with renewable energy development in the ***peak*** scenario of the RePower Humboldt plan could amount to $800 million dollars or more, and the instant capital costs required for associated transmission and distribution system upgrades could increase these costs by 25% to 100%. Where will the capital investment come from to fuel this infrastructure development? One possibility is attracting outside entities that develop, own and operate the facilities. However, there is a strong desire for local community ownership and participation, and financing community owned projects would bring added challenges. Public-private partnerships, such as flip structures, offer potential means for attracting equity financing and public bonds provide a means for securing debt financing. However, none of these approaches are simple; they will require substantial planning and effort from committed and well-informed local project champions. Pre-construction work can include resource assessment, feasibility studies, permitting, zoning, interconnection studies and power purchase negotiations. These efforts will also require funding, which in part could be funded through state and federal grants.

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