# DECOMMISSIONING

## A. REVIEW CRITERIA

12 MRSA §685-B *(and 10.24, Land Use districts and Standards)*

4. Criteria for approval. In approving applications submitted to it pursuant to this section, the commission may impose such reasonable terms and conditions as the commission may consider appropriate.

   The commission may not approve an application, unless:

   A. Adequate technical and financial provision has been made for complying with the requirements of the State's air and water pollution control and other environmental laws, and those standards and regulations adopted with respect thereto, including without limitation the minimum lot size laws, sections 4807 to 4807-G, the site location of development laws, Title 38, sections 481 to 490, and the natural resource protection laws, Title 38, sections 480-A to 480-Z, and adequate provision has been made for solid waste and sewage disposal, for controlling of offensive odors and for the securing and maintenance of sufficient healthful water supplies;

   B. Adequate provision has been made for loading, parking and circulation of land, air and water traffic, in, on and from the site, and for assurance that the proposal will not cause congestion or unsafe conditions with respect to existing or proposed transportation arteries or methods;

   C. Adequate provision has been made for fitting the proposal harmoniously into the existing natural environment in order to ensure there will be no undue adverse effect on existing uses, scenic character, and natural and historic resources in the area likely to be affected by the proposal;

   D. The proposal will not cause unreasonable soil erosion or reduction in the capacity of the land to absorb and hold water and suitable soils are available for a sewage disposal system if sewage is to be disposed on-site;

   E. The proposal is otherwise in conformance with this chapter and the regulations, standards and plans adopted pursuant thereto; and

   F. In the case of an application for a structure upon any lot in a subdivision, that the subdivision has received the approval of the commission.

   The burden is upon the applicant to demonstrate by substantial evidence that the criteria for approval are satisfied, and that the public's health, safety and general welfare will be adequately protected. Except as otherwise provided in Title 35-A, section 3454, the commission shall permit the applicant and other parties to provide evidence on the economic benefits of the proposal as well as the impact of the proposal on energy resources.

B. LIST OF KEY EVIDENCE

- Development Application DP4886; Narrative Section 20 and Exhibit 20
- Sewall Memorandum: Bull Hill Decommissioning Budget, to David Fowler, First Wind. 4/12/2011
  *This response replaces the Decommissioning Costs information filed in Exhibit 20.*
- 'Bull Hill' Procedural Order 4: 'Judicial notice of prior decisions …' Staff submission of decommissioning plans for other wind projects from LURC and DEP applications.
- Applicant and Intervenor CCRHC Testimony & Correspondence: Pre-filed and public hearing testimony and rebuttals
- Public Testimony of Alan Michka
- Public Testimony of David Boulter
- Applicant response to Procedural Order 6 post hearing questions
- Intervenor CCRHC rebuttal to Procedural Order 6 responses
- Applicant BSE Final Brief
- Intervenor CCRHC Final Brief

C. APPLICANT'S PROPOSAL

<u>DECOMMISSIONING PLAN</u> *(Summarized by Staff from the application and subsequent submissions)*

- Disassembly and removal of above-ground structures
  - turbines
  - overhead collector lines
  - meteorological tower (assumes all towers but note possible one remaining to be permitted by Hancock County for telecommunications)
- Removal of below-ground structures to a depth of 24 inches
  - Concrete pad and footings of towers (disposal on site or trucking off site to be determined)
  - Culverts of closed out roads
  - fiber optic cables between turbines
  - Note: underground electrical collector line is intended to be abandoned in place (appx 8.2 mi)
- Regrading and seeding
  - regrading to match surrounding grades for pre-project natural drainage
  - includes erosion and sedimentation control
  - monitoring for vegetation survival
- Assumes operations & Maintenance Building turned over to land owner.
- Substation is turned over to Bangor Hydro.
- Applicant will submit review of decommissioning plan to LURC during operational years 7 and 15.
- Lease allows for project to be renewed beyond twenty-five year lease agreement
- Twelve months of no electrical production triggers the decommissioning plan.

DECOMMISSIONING BUDGET *(Based on Sewall Memorandum 4/12/11)*

COSTS

Decommissioning costs are based on the assumption that all turbines, interconnection facilities, and other project components will be disposed of. Estimates for labor, equipment and fuel costs are in today's dollars. Wages are based on 2011 Maine State Labor statistics for Washington County.

| | |
|---|---|
| Mobilization of crane and equipment | $330,000 |
| Project Oversight | $125,000 |
| Incidentals (5% of costs) | $100,000 |
| Contingency (10% of costs) | $200,000 |
| Project Management Total | $755,000 |
| Re-grading | $107,000 |
| Road Maintenance | $120,000 |
| Site Work/Civil total | $227,000 |
| Removal 2-feet below grade, all 19 sites | $114,000 |
| Trucking for on-site disposal, 19 sites | $46,000 |
| Wind Turbine Foundations total | $160,000 |
| Labor to disassemble turbine towers | $48,000 |
| MET Tower disassemble & removal | $16,000 |
| Crane rental | $390,000 |
| Labor to cut & prepare scrap for salvage | $57,000 |
| Transport WTG salvage to Buyer | $228,000 |
| Transport MET tower salvage to Buyer | $4,000 |
| **Turbine and MET towers total** | **$743,000** |
| Grand Total | **$1,885,000** |

REVENUE

Decommissioning plan revenue is based on the assumption that the cost will be fully or partially offset by the salvage value of the towers and turbine components.

The presumed Scrap Value of the total project is $1,636,000. The weight of the turbine components are detailed in the table below from the Sewall memo of April 12, 2011.

| | | | |
|---|---|---|---|
| Base: | 127,000 lb | Hub: | 55,000 lb |
| Lower Mid: | 139,000 lb | Gear Box: | 98,000 lb |
| Upper Mid: | 118,000 lb | Machine Base Assembly: | 68,000 lb |
| Top: | 92,000 lb | Generator: | 4,000 lb |

- Each turbine is 701,000 lbs or 350.5 tons. Today #1 Scrap Steel is $270/ton and #2 Scrap Steel is $200/ton. The avg. of both is $235/ton at 19 turbines is $1,558,000.
- Total scrap value of 3 MET towers: $2,000
- Total scrap Value of internal transformers: $76,000

TOTAL

| | |
|---|---|
| Total of Decommissioning Costs for disassembly & removal total | $1,885,000 |
| Total of Scrap Value for project total | $1,636,000 |
| Net Estimated Cost for Decommissioning | $249,000 |

D. SELECTED COMMENTS FROM THE RECORD

Applicant response to sixth procedural order regarding the timing and method for updating cost and escrow amounts:

*"Consistent with the approach taken by the DEP in permitting of wind power projects, the Applicant proposes the following: The Applicant will reassess the estimated salvage value and overall estimated decommissioning costs at the end of the 7th and 15th years of operation. The reassessed salvage values and overall decommissioning cost estimates must be submitted to LURC for review and approval no later than December 31st of the 7th and 15th years of operation. The Applicant may select the most appropriate methodology for estimating both removal costs and salvage values, but must explain and provide support for the methodology selected. If the decommissioning reserve shows a shortfall based on the revised estimates at the end of the 15th year of operation, the Applicant will make a lump sum contribution to the decommissioning reserve to ensure that the reserve is sufficient to fully fund decommissioning and will do so within 60 days of LURC's review and approval of the reassessed overall decommissioning costs.*

*If the project is operated beyond 20 years, the Applicant will reassess the estimated salvage value and overall estimated decommissioning costs at the end of the 20th and 25th years of operation. The reassessed salvage values and overall decommissioning cost estimates must be submitted to LURC for review and approval no later than December 31st of the 20th and 25th years of operation. If the decommissioning reserve shows a shortfall based on the reassessment, the Applicant will make a lump sum contribution to the decommissioning reserve to ensure that it is sufficient to fully fund decommissioning and will do so within 60 days of LURC's review and approval of the reassessed overall decommissioning costs."*

Excerpt from CCRHC final summary brief:

*"LURC must apply its [sic] own rules. Rather than rely on the speculative nature of the future scrap and salvage value of the turbines and related components, the Commission should require the Applicant to carry the risk of market fluctuations by requiring the Applicant to provide full funding for the entire decommissioning project prior to construction in the form of a bond or other surety, rather than waiting seven years to even assess what decommissioning might cost thirteen years hence. The Commission has the authority to require this and, in fact, has the fiduciary responsibility not to put the state and the county at major financial risk. If the Commission does approve this industrial development, CCRHC strongly urges that this financial requirement be imposed."*

SELECTED PUBLIC HEARING TESTIMONY FROM PUBLIC AND INTERESTED PERSONS

Staff summary from comments on decommissioning by Alan Michka, Lexington Twp. ME:

*Recommendations to LURC:*

- *Apply the same rules to individual turbines as the project as a whole with regard to triggering requirements for decommissioning.*
- *Redefine Force Majeure to give some assurances to the state that decommissioning can be enforced.*
- *Disallow the use of estimated salvage values in fund calculations. Require the applicant to carry this risk.*
- *Require the applicant to provide full funding for the entire project prior to construction in the form of a bond, third party escrow, or specialty insurance product, or the equivalent to assure that funds are available which are not subject to the applicant's future financial condition.*

*The Commission has the authority to set decommissioning plan requirements as it sees fit. Given the rapid proliferation of wind turbines on Maine's landscape, it is time to start raising the bar on decommissioning plans in order to protect Maine's assets.*

Portion of Comments by David Boulter, seasonal resident of Eastbrook, ME

*"I recommend that if the commission approves the application that it require the applicant to provide financial assurance in the form of a performance bond, surety bond, letter of credit or other verifiable form of financial assurance that upon the end of the useful life or cessation of operation (even if earlier than 7 years) will have sufficient financial assurance in place to cover 100% of the cost of decommissioning. While securing the financial assurance in phases is acceptable, the total required financial assurance should be in place within 5 years of commencement of operation. Risk for the first five years should relatively low because a higher salvage value can be predicted and expected for that short period. Beyond that period, it is too speculative to be relied upon with any certainty."*

## E. COMPARISONS TO OTHER PROJECTS

Procedural Order 4 took official notice of materials containing details of the decommissioning plans of other Maine wind projects that have been approved or proposed to both LURC and the DEP. The materials also included the court decisions of several appeals that had rulings involving the comprehensiveness of a proposed decommissioning plan. These materials provide an overview of the components that make up a decommissioning plan as well as a sense of the amount of the net cost that is held in escrow to pay for decommissioning.

Making comparisons between wind projects can be useful as long as certain differences are kept in mind that may affect the cost or revenue of each project. Examples of these are:

- Turbines:
  - The number to be removed;
  - The type of turbine foundation, i.e. rock anchor vs. spread footing;
- Roads:
  - The length of the access roads and crane paths to be restored to a natural state, vs. will the roads be re-used;
- Collector lines:

  - Overhead lines that would be removed vs. underground lines that would be abandoned but left in place;
  - The distance from the turbines to the substation;
- Will the substation be dismantled or turned over to a utility;
- Will the Operations & Maintenance facility be dismantled or re-used;
- Distance of the wind project to services, salvage buyers, and debris disposal, in particular the effect on trucking costs
- Provisions for stabilization and re-vegetation of the site, i.e. high elevation sites requiring specific measures as compared to low elevation sites where standard practices may be used.

The applicant addressed why costs might be lower for the Bull Hill project versus others in the response to the Sixth Procedural Order:

*Q: Is there a method by which the Applicant can calculate a per-turbine decommissioning cost?*

*"RESPONSE: The material prepared by Sewall and submitted to the Commission by the Applicant on April 13, 2011 provides a detailed breakdown on the removal costs and the salvage values for each component part, including the wind turbine foundations and the wind turbine generators for the Bull Hill Project. A "per turbine" decommissioning cost could also be calculated by dividing the net decommissioning costs for each project (removal costs less salvage value) by the number of turbines proposed for a project.*

*However, we don't believe this is a particularly meaningful number to compare across projects because the total decommissioning costs for the Bull Hill Project are distinct from other projects that have provided decommissioning information. Specifically, the entirety of the collector system is buried to a depth of more than 24 inches and it will not be removed. Further, due to the proximity of the Project to the existing BHE line, there is no generator lead line and therefore no decommissioning of either a generator transmission line or a substation facility. As a result, many of the costs typically included in other decommissioning calculations are not applicable here and a simple cross-project comparison on a per turbine or other basis is difficult."*

Nevertheless, it is useful to understand the history of costs and escrow accounts associated with other projects. Those are presented below in a table that summarizes key pieces of information that were included with the fourth procedural order.

| Wind Project | Turbines No./MW | Removal Items | Special Circumstances | Total Escrow Amount/Net cost per turbine |
|---|---|---|---|---|
| Kibby II (TransCanada) 2011 | 11 33 MW | Above and below ground structures down to 2 ft, closeout of some roads. | High elevation | $2,458,281 $163,885 |
| Stetson II (First Wind) 2009 | 17 25.5 MW | Above and below ground structures down to 2 ft, closeout of some roads. | Short collector line No substation No O&M facility Leave roads for use during timber harvesting | $374,000 $22,000 |
| Kibby I (TransCanada) 2008 | 44 132 MW | Above and below ground structures down to 2 ft. Remove 115 kV line if not used by other projects, closeout of some roads. | High elevation | $3,149,514 $71,580 |
| Stetson I (First Wind) 2008 | 38 57 MW | Above and below ground structures down to 2 ft, closeout of some roads. | Short collector line Leave roads for use during timber harvesting | $1,366,550 $35,962 |
| Bowers Mtn. (First Wind) - pending | 27 69.1 | | | $508,000 $18,815 |
| Bull Hill (First Wind) – pending | 19 34.2 | Above and below ground structures down to 2 ft., closeout of some roads. | No collector line, O&M building reverts to land owner, substation transfers to Bangor Hydro | $249,000 $13,105 |
| Saddleback Ridge (Patriot Renewables) | 12 33 | | | $558,444 $46,537 |
| Rollins Mtn. (First Wind) | 40 60 | | | $794,000 $19,850 |
| Oakfield (First Wind) (expansion under review) | 34 51 | | | $935,531 $27,516 |
| Spruce Mtn. (Patriot Renewables) | 11 20 | | | $349,052 $29,302 |
| Record Hill (Independence Wind) | 22 50.6 | | | $828,215 $37,646 |

F. ANALYSIS

Initially, the application based the decommissioning amount on the resale of wind turbine generator components. That approach would have required more expensive engineering, dismantling costs, and equipment to preserve the working value of such items for resale. The application's initial Exhibit 20 had higher costs assumed for decommissioning accompanied by the higher revenue values based on the sale of reusable items. The proposed escrow amount under this approach was $249.000.

LURC staff asked the applicant to provide more information to support that escrow figure as it appeared to be low. Blue Sky then contracted Sewall Company engineers to provide an engineered decommissioning plan. Their major revision to the plan is that the revenues would now be based on scrap salvage value and not resale of useable parts. First Wind's initial staff decommissioning plan based on resale and Sewall Company's engineered decommissioning plan based on scrap metal income to fund the decommissioning plan resulted in the same escrow amount of $249,000.

The proposed decommissioning plan relies heavily on funding decommissioning with the proceeds of selling scrap metal. Based upon a comparison with the Bowers Mtn. project, and some of the more recent MDEP projects where discussion of salvage value has been examined, staff has concerns that the amount of money to be escrowed may not be sufficient to cover the cost of removing the structures if the price of scrap metal is not at its present high value in the future. Any contingencies built into the decommissioning plan must be sufficient to cover both unanticipated expenses, as well as changes in the cost of services and the value of scrap. Some reasonable assumptions can be made about cost increases by assuming an inflation rate, but it is understood that this would be difficult with scrap values because they fluctuate substantially *(see applicant's response to the sixth procedural order)*. Therefore, it is particularly important that the decommissioning plan and cost estimates be periodically reviewed and adjusted as needed, as well as there being a provision to add the amount needed to make up any deficiency, as has been proposed by the applicant. Even with that, however, the staff has concerns that the initial outlay of $249,000 may not be adequate.

One aspect of decommissioning that requires a close look is the disposal of concrete footing debris. This debris will either be disposed of on site or trucked off-site for disposal. If the debris is taken off site, costs will be based upon, for example, trucking costs, including fuel and distance to a disposal facility, any disposal fees, the position of the landowner on allowing on-site disposal, and the extent of rebar removal for disposal. The decommissioning plan now minimizes such costs by proposing for on-site disposal as stabilization for roadsides or use in road construction. If the Commission decides to approve the project, it seems reasonable to include a condition that requires the applicant to identify and obtain pre-approval of the areas for such disposal. If such areas cannot be located, then the decommissioning plan would have to be adjusted accordingly to account for additional off-site disposal costs.

The testimony from the public and the intervenors makes several points. Their primary issue is that until the cost of decommissioning is fully funded the State would be responsible for this cost should it have to step in. The applicant's assertion that the value of re-useable components or scrapping the metal will nearly cover the cost of decommissioning is a risk that would be borne by the State. This funding mechanism requires relying on what is recognizably a price-volatile scrap market to recover the substantial cost of dismantlement.

There are alternate ways to consider the adequacy of an escrow account – one could assume a scrap value of zero and require all costs to be escrowed, use the current scrap value, use a historical average scrap value, or require frequent reevaluation to adjust for changing conditions.

The wind industry in Maine, past DEP and LURC decisions, and the decisions of the Maine Supreme Court following a wind project appeal, have affirmed a minimum standard to review the decommissioning plan escrow amount at the seventh year of operation. Seven years is also the recent standard for fully funding the escrow account. Review again is benchmarked at year fifteen and then is left for project close-out at the end of its 20-year lifecycle or renewal as the project is extended. The Blue Sky East lease is a 25-year term with an option to renew for the same period.

The trigger for decommissioning is a twelve month time period of no electrical generation by the full complement of turbines. Testimony in the record, however, urged the Commission to apply the trigger to individual non-producing turbines. To bring a crane on site for the removal of a relatively small number of turbines may be expensive and achieve little benefit. Should consideration, however, be given to a percentage of unused turbines? Staff recommends that if a majority of the turbines are not producing power for at least 12 months, decommissioning of the non-producing turbines could be triggered, thus avoiding a circumstance in which a handful of functional turbines prevents decommissioning of a largely defunct project. For example, a condition of approval might require that if fifty percent or more of the turbines are no longer generating electricity, then the applicant shall submit for Commission review and approval a report explaining whether the approved decommissioning plan remains adequate. If the Commission determined the plan no longer remained adequate, a new decommissioning plan, subject to Commission review and approval, would be required.

G. QUESTIONS

1. Is the proposed escrow amount adequate to fund decommissioning such that there would be no undue adverse impact on existing uses? If no, what would be a sufficient amount for escrow, and if the application is approved do you wish to impose that amount as a condition of approval?

2. Is a reevaluation of costs at seven and fifteen years an acceptable schedule?

3. If the application is approved, do you want to require a condition of approval that requires prospective concrete disposal areas to be identified prior to construction? Does the Commission want to require an adjustment to the plan to account for additional disposal costs if suitable on site locations cannot be found?

4. If the application is approved, do you want to require a condition of approval that may require decommissioning when more than 50% of the turbines have not been producing power for at least 12 consecutive months?