

Town of Kennebunk and Kennebunk Light & Power District  
Joint Board Meeting  
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# Facilitator Comments

## Discussion of Options for KLPD Hydropower Facilities



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# Facilitator Discussion: Agenda

1. Background of Dams
2. Overview of Alternatives
3. Key issues to address With Each Alternative:
  1. What does each alternative mean?
  2. What is the general process for each alternative?
  3. What is the estimated timeline and cost for each alternative?

# 1. Background on KLPD Hydropower Facilities\*

KLPD owns three dams and associated hydropower facilities on the Mousam River all located in the Town of Kennebunk (the Town):

- Kesslen
- Twine Mill
- Dane Perkins

\*Source: Wright-Pierce Assessment Study May 3, 2016

# Kessler

- The most downstream of eleven dams on the Mousam River
- Been in place since the 1800s to provide power to the Kessler Shoe Factory
- Impoundment has a surface area of approximately 20-25 acres
- Nameplate is rated at 150 KW and produces 2,400 volt, 3-phase power at a frequency of 60 Hz, but is operating below nameplate capacity
- Due to the location, it would require significant costs to replace generator



# Twine Mill

- Located approximately 2.0 linear (“as-the-crow-flies”) miles upstream of the Kessler dam (approximately 3.6 river miles upstream)
- Original dam breached around 1960 and reconstructed in 1980-1981
- Impoundment has surface area of approximately 12 acres
- Turbine less than 30 years old, more efficient than the other two facilities
- Powerhouse sustained damage from flooding in 2006 and again in 2007. Damage repaired



# Dane Perkins

- Located approximately 0.5 linear and river miles upstream of the Twine Mill dam
- Original dam was breached in 1977 reconstructed in 1980-1981
- Impoundment has a surface area of approximately 25 acres
- Equipment has been operational for over 75 years and is inefficient but operable



# Why are we here?

- The three hydropower facilities are licensed under a single FERC license, which expires on March 21, 2022:
  - Must notify FERC of intent to file new license no later than March 21, 2017
  - If seeking new license, application must be filed no later than March 21, 2020
- KLPD has determined that surrender of the license is the only feasible alternative.
  - Alternatives 1 and 2 below have been determined not viable
  - KLPD has been unable to find a buyer or other party willing to take on the three hydropower facilities



# Who has an interest?

- Short answer: Lots of people and organizations, including:
  - Citizens of Kennebunk and surrounding areas;
  - Landowners
  - Several government agencies and non-governmental organizations (NGOs) (e.g. Town, KLPD ratepayers, FERC, ME DEP, National Park Service, US Fish & Wildlife, ACOE and Maine Department of Marine Resources, river alliances, land trusts, sportsman's associations, real estate agencies)
- The entities interests focus on:
  - Cost/feasibility of each alternative;
  - Habitat and species restoration for migratory fish species; and
  - Impacts to property values and other concerns associated with dam removal
- What's the likelihood of achieving stated goals?

# Generation Costs

## Approximate Cost To Generate Electricity (Long- Term)

Alternative	Total Cost of Alternative	Decommissioning Cost	Net Cost	Total kWh	Cost (\$/kWh)
#1 – Re-License Sites (range)	\$ 13.3M -\$16.9M	\$2,548,266	\$10.7M -\$14.3M	57,400,00	\$0.19-0.25
#2 – License Exemption	\$13,671,039	\$2,548,266	\$11,122,773	63,550,000	\$0.18
#3 – Non-jurisdiction (Kesslen only)	\$6,119,543	\$2,548,266	\$3,571,277	18,450,000	\$0.19
<b>Purchase Energy on Market</b>	--	--	--	--	<b>\$0.08158</b>
Solar Energy	--	--	--	--	\$0.10

# Alternatives

What are our Alternatives???



# Overview of Alternatives

- **Alternative #1:** Seek New License to Continue Hydropower Generation with Dams in Place
- **Alternative #2:** Seek License Exemption & Continue Hydropower Generation with Dams in Place
- **Alternative #3:** Seek FERC Non-jurisdiction Only for the Kesslen Site
- **Alternative #4a:** Cease Hydroelectric Generation and Surrender the FERC License for All Three Dams
- **Alternative #4b:** Cease Hydroelectric Generation and Surrender the FERC License with a Consensus Proposal for addressing Environmental Issues at the Three Dams
- **Alternative #4c:** Cease Hydroelectric Generation and Surrender Twine Mills and Dane Perkins while seeking Non-Jurisdiction for Kesslen
- *Are there other variations of Alternative #4?.....*

# Alternative #1: Seek New License to Continue Operations

- What does it mean?
  - KLPD applies for new license
  - If approved, this option would permit the three facilities to continue operating for a likely license term of 40 years
  - Term based on capital costs associated with compliance with the new license
  - It is likely that upstream and downstream fish passage would be required and represent substantial investment supporting a 40 year term

# Alternative #1 (cont.)

- What is the process?
  - The timeline for this option would likely extend to or beyond the 2022 license expiration date.
  - Any decisions by FERC or Maine Department of Environmental Protection (MEDEP) on this alternative could be appealed to the relevant administrative tribunal then on to court at the original and appellate levels.

# Alternative #1 (cont.)

- What is the cost?
  - Wright Pierce estimated the costs associated with this option at \$8.8 - \$11.7 million in 2016 dollars thereby establishing a net present worth for the assets of negative \$3.5 to \$6.3 million in 2016 dollars.
  - GZA peer reviewed these numbers and returned substantially similar figures for this alternative (negative \$3.9 to 6.5 million).
  - This alternative has the highest cost and the KLPD Board has determined it is not feasible

# Alternative #2: Seek License Exemption to Continue Operation

- What does it mean?
  - A License Exemption would allow continued generation at all three dams
  - Exemption does not expire
  - Exemption "conditions" often allow state and/or federal agencies to require additional environmental enhancement, which means:
    - Overall requirements for an exemption may not necessarily be that different than those for a license



# Alternative #2 (cont.)

- What is the process?
  - Two requirements must be satisfied in order to file for a License Exemption:
    1. Additional capacity must be installed (no threshold on how little is added)
    2. KLPD must demonstrate they hold all land rights that would be needed to operate and maintain the three facilities (land rights could take the form of ownership in fee or easements)
- However: FERC may deny a license exemption if the economic and power production benefits of the project don't outweigh the associated environmental impacts

## Alternative #2 (cont.)

- Addressing requirement one (additional capacity):
  - The installation of a micro-turbine would address the "capacity added" condition at a reasonable capital cost, estimated by Wright Pierce at approximately \$400,000
  - Additional power generation would be minimal
- Addressing requirement two (land rights):
  - Confirmation of land rights required
  - KLPD has started this research internally; it is not clear whether the research has been completed or what the results are
  - If such rights are not currently held, or could not be acquired, a License Exemption is not possible

# Alternative #2 (cont.)

- What is the cost?
  - Wright Pierce estimated the costs associated with this option at \$9.2 million in 2016 dollars thereby establishing a net present worth for the assets of negative \$3.3 million in 2016 dollars. GZA peer reviewed these numbers and returned a substantially similar figure for this alternative (negative \$4 million).
  - This alternative includes FERC and MEDEP decisions that could be appealed first administratively and then in court, but would then be final at the federal level- no future proceedings.
  - This alternative has a timeline that is substantially similar to Alternative 1.
  - GZA indicated (and we agree) that this alternative has a low probability of success. As such, the KLPD Board has determined this alternative is not feasible.

# Alternative #3: Seek FERC "Non-Jurisdiction" Only for the Kessler Site

- What does FERC "non-jurisdiction" mean?
  - FERC does not have jurisdiction over facilities that are:
    - On "non-navigable" waters; and
    - Were not constructed or enlarged after August 26, 1935
- If approved, this alternative would allow continued operation of the Kessler dam without FERC oversight.
  - Fact intensive review of "non-navigable" and date of construction
  - In 1996, FERC found that the Estes Project just upstream of Dane Perkins was non-jurisdictional (Note: this does not mean FERC will find the same for Kessler)
  - Issues of navigability and construction date will be fact intensive (e.g. research from historians, experts)

\* Harvey Consulting research indicates that activities at the Dane Perkins and Twine Mills Dam would prohibit a FERC finding of non-jurisdiction for those two dams, even if FERC determines the Mousam River is not navigable (*Mousam River: History and Navigability*, Harvey Research and Consulting, Bruce G. Harvey, January 29, 2015)

# Alternative #3 (cont.)

- What is the process?
  - KLPD would seek a declaratory order with FERC that Kessler is not required to be licensed (because of non-navigability and date of construction)
  - Public notice, hearing, fact intensive review
  - FERC is not required to act within any particular time period, but would likely issue an order within 4-6 months

## Alternative #3 (cont.)

- If successful in the declaratory order, FERC would have continuing jurisdiction over Dane Perkins and Twine Mill
  - Filing for a License or Surrender would be required for these facilities
  - The FERC Licensee (KLPD) would remain responsible for any actions dictated at these two facilities (such as fish passage or dam removal)
- MEDEP, IF&W and Maine Department of Marine Resources each have statutory authority that could result in fish passage requirements for FERC non-jurisdictional dams

# Alternative #3

- What does it cost?
  - Wright Pierce estimated the costs associated with this option at \$9.2 million in 2016 dollars thereby establishing a net present worth for the assets of negative \$2.2 million in 2016 dollars.
  - GZA peer reviewed these numbers and returned a similar value of negative \$2.3 million.
  - This alternative is believed to have a relatively short timeline such that it could be done in conjunction with other alternatives.
  - This alternative is not a freestanding option (see 4c below) and has a "reasonable chance" of success

# Alternative #4a: Cease Operation and Surrender the FERC License for All 3 Sites

- What does it mean to "surrender" the license?
  - Surrender of the FERC Licenses for all three dams requires discontinuance of hydropower generation and actions to prevent future generation
  - Multiple government agencies and NGOs/local citizen groups have expressed interest in:
    - removal or breach of the dams or installation of fish passage
    - thus it is foreseeable that a condition of surrender could be addressing fish passage



# Alternative #4a (cont.)

- What is the process?
  - Application must state reason for license surrender
  - Must be prepared and filed in format similar to an application for license renewal
  - Consultation process used for obtaining input from agencies & other interested parties also required
    - Ensures that data is obtained to understand the impacts and benefits of such an action
  - Surrender of a FERC license does not automatically necessitate dam removal

# Alternative #4a (cont.)

- Environmental studies will be required under the FERC surrender process if dam removal is proposed in order to examine possible impacts compared to other site alternatives, including a “no action” option.
  - If KLPD chooses not to implement fish passage facilities (including partial breach or removal), it will be required to provide additional data showing fish passage is not necessary at this time
- A permit from the US Army Corps of Engineers (ACOE) would also be required if dam removal is proposed
- The Maine Department of Environmental Protection (MEDEP) also requires a Natural Resource Protection Act permit under the Maine Waterway Development and Conservation Act
  - This process has specific public informational meeting requirements to ensure all potentially affected stakeholders have an opportunity to participate in the process

# Alternative #4a (cont.)

- What is the cost?
  - Wright Pierce estimated the costs associated with this option at \$2.3 million in 2016 dollars thereby establishing a net present worth for the assets of negative \$1.6 million in 2016 dollars.
    - Wright Pierce cost estimates for this Alternative assumed that the powerhouse and equipment would be removed at Dane Perkins and Twine Mill and disabled and left in place at Kesslen and that all three dams would be substantially removed.
    - The Wright Pierce cost estimate for this Alternative is the most favorable and supports KLPD implementation of this option. This alternative requires FERC and MEDEP (and could require ACOE) approvals each of which can be appealed administratively (except ACOE) and in court
  - GZA peer reviewed these numbers and returned a low end figure of negative \$1.6 million and a high end figure of 2.6 million.
    - GZA believes that dam removal costs could be higher than those carried in the estimate for the following reasons: Water control during removal projects necessary and expensive; Access may be difficult – there are often legacy structures, such as timber cribs, upstream of the current dams which will need to be removed; unanticipated additional sediment costs

## Alternative #4b: Cease Hydroelectric Generation and Surrender the FERC License with a Consensus Proposal for addressing Environmental Issues at the Three Dams

- What does this mean?
  - Surrender the dams to another entity (such as the Town)
  - Provide in the surrender application a plan to address environmental and other concerns (such as fish passage)
- Due to abutting property owners' responses to the potential removal of Kessler, GZA suggests keeping Kessler operational, while removing the other two dams, which could resolve many abutter concerns about dam removal
  - Engineered upstream and downstream fish passage structures at Kessler could provide access to the river reaches restored by the removal of the other two dams
  - NGOs and other interest groups may oppose this option because the downstream barrier would be retained and the effectiveness of the removal of the upstream dams would be dependent upon the success of the fish ladder and eel ramp at Kessler

# Alternative #4b (cont.)

- What is the process?
  - The appeal and timelines would be similar to those for Alternative 1 and 4.
- What are the estimated costs?
  - GZA looked at some additional alternatives involving surrender and concluded that these filings would have costs consistent with Alternatives 4 and 3 (*i.e.* lower costs than Alternatives 1 and 2).

# Alternative #4c: Cease Hydroelectric Generation and Surrender Twine Mills and Dane Perkins while seeking Non-Jurisdiction for Kessler

- What does it mean?
  - Seek (1) "non-jurisdiction" for Kessler; and (2) "surrender" or "surrender with consensus proposal for environmental concerns" Twine and Dane Perkins
  - A determination of non-jurisdiction (Kessler) would provide the FERC Licensee with flexibility
  - This alternative may not eliminate future fish passage or other environmental requirements imposed by other regulatory bodies per above discussion of alternative 3

# Questions?

# Cost Analysis

## Net Values Associated with the Cost Analysis (2016 dollars)

Alternative	Costs	Equivalent Revenues	Net Present Worth
1A – Relicense Sites – Low End of \$ Range	\$8,844,989	\$5,367,964	(\$3,477,025)
1B – Relicense Sites – High End of \$ Range	\$11,680,989	\$5,367,964	(\$6,313,025)
2 – License Exemption	\$9,194,989	\$5,869,681	(\$3,325,308)
3- Non-Jurisdiction (Kesslen only)	\$4,392,122	\$2,190,423	(\$2,201,699)
4a – Surrender License (remove all dams – low end of \$ range)	\$2,321,722	\$682,272	(\$1,636,450) (\$1,568,453) – GZA estimate low end (\$2,588,288) – GZA estimate high end
4b – Surrender License (consensus proposal for dams)	Unknown	Unknown	Unknown
4c- Surrender License (Surrender License + NonJurisdiction for Kesslen Only)	Unknown	Unknown	Unknown



# Cost Analysis (cont.)

## Costs Covered by Borrowing

Alternative	Estimated Value of Bond	Interest Rate	Term	Cost Per kWh (approximately)
#1A – Re-License Sites – Low End of \$ Range	\$3,979,205	3.1%	20 years	\$0.0027 (\$24/yr for user with 750 kWh/month)
#1B – Re-license Sites – High End of \$ Range	\$6,526,713	3.1%	20 years	\$0.0044 (\$40/yr for user with 750 kWh/month)
#2 – License Exemption	\$4,425,254	3.1%	20 years	\$0.0030 (\$27/yr for user with 750 kWh/month)
#3 – Non-jurisdiction (Kesslen only)	\$2,714,770	3.1%	20 years	\$0.0018 (\$16.57/yr for user with 750 kWh/month)
#4 –Surrender License (remove all dams)	\$2,548,266	3.1%	20 years	\$0.0017 (\$15.55/yr for user with 750 kWh/month)
All Other Alternatives	Unknown	Unknown	Unknown	Unknown