



Study Presentation: Draft Feasibility Study - Transmission Lines Action Plan.

Berlin, NH, October 4, 2010



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Study Objective and Approach

EXECUTIVE SUMMARY (1)

Objective: “Develop the framework of an action plan to pay for the upgrade of the transmission system in the North Country.”

Approach:

- Met with Stakeholders to solicit input
- Recommended cost allocation methodologies and a financial framework appropriate for the Coos Loop
- Described the potential cost impact of cost allocation methodologies
- Developed the framework of an action plan

Findings

EXECUTIVE SUMMARY (1)



- **Regional cost allocation through ISO-NE tariff is unlikely.** Socializing localized transmission costs across all New England ratepayers is an unlikely prospect given both current New England rules and given the nature and design of the Coos Loop.
- **FERC rulemaking will likely not have a significant impact.** Although the Federal Energy Regulatory Commission (FERC) is currently considering changes to its transmission rules, it is unlikely that such amendments will have a direct near-term impact on the Coos County transmission development.
- **Approaches which allocate costs to beneficiaries and which serve public policy purposes are more likely to succeed.**

Findings

EXECUTIVE SUMMARY (1)

- **This study recommends an approach that reduces developer risks through State-based loans to be repaid by developers.**

The State would make commitments to purchase power and provide up-front financing or low-debt loans to help reduce developer risk. Repayment to the State would occur over time through reduced rates negotiated in advance with developers.

- *Purchase power agreement (PPA)* between the State of New Hampshire and renewable energy developers.
- *Up-front loan by the State* to upgrade the Coos Loop, repaid by lower cost power in the PPA.

Findings

EXECUTIVE SUMMARY (1)



- **Regional planning initiatives are currently underway which could impact efforts in New Hampshire.**
If successful, these efforts could affect plans to upgrade the Coos Loop to interconnect additional North Country renewable resources.
 - Governors' Blueprint
 - Utility discussions underway
- The lack of deadlines associated with the regional initiative, and the uncertainty in the transmission design, means that there is a **tradeoff between waiting** to assess potential synergies between a regional transmission development solution **versus moving forward now** to control the timeline and design of transmission development in New Hampshire's North Country.

Stakeholders

STAKEHOLDER ROLES, FEEDBACK AND CONCERNS (3)

- NCTC
- State Agencies and Officials
 - Office of the Governor
 - Office of Energy and Planning
 - Public Utilities Commission
 - Office of Consumer Advocate
 - Site Evaluation Committee
 - Legislators
- North Country Representatives
 - Economic Development Organizations
 - Coos County Commission
 - The General Public
- Electric Utility Companies and Transmission Owners
 - PSNH
 - NGrid
 - Anbaric

Stakeholders: State Agencies & Officials

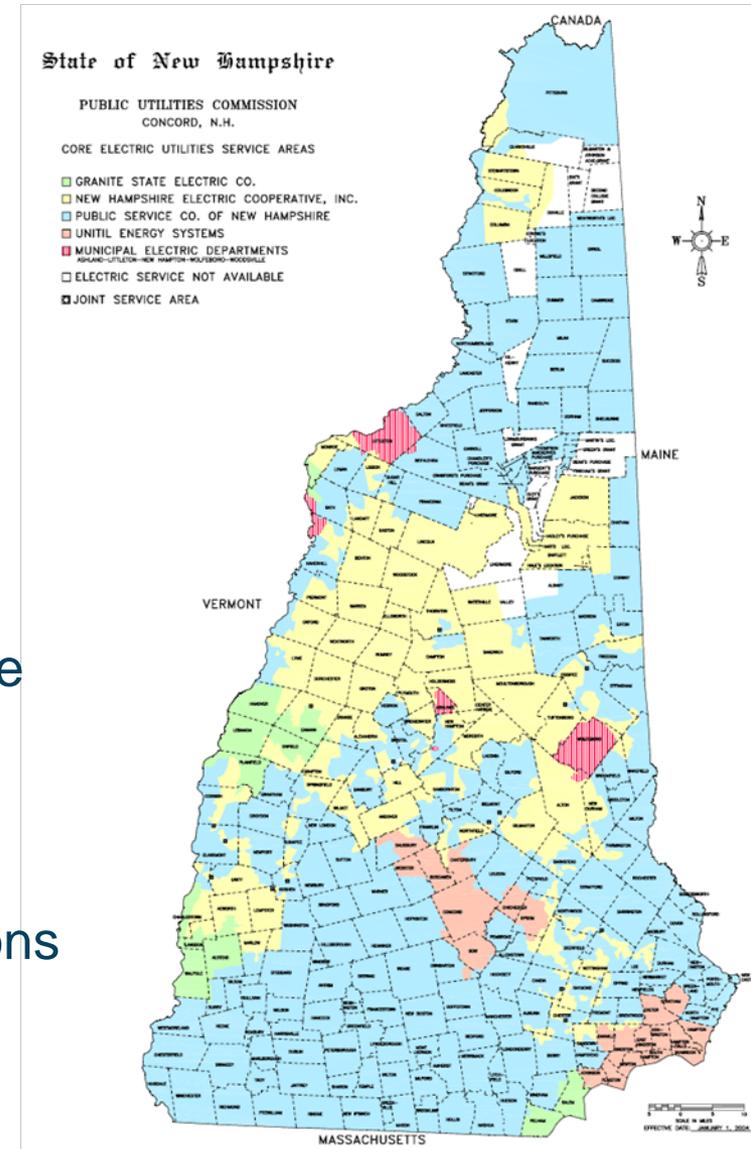
STAKEHOLDER ROLES, FEEDBACK AND CONCERNS (3)

- Office of the Governor
 - 25% by 2025 goal
 - State office buildings energy reduction (10%, 25%)
 - Renewable energy procurement (\$4.4 million, 25%)
 - Governor's blueprint
- Site Evaluation Committee
 - Criteria to evaluate (includes financial ability and aesthetics impact)
 - Recent approval of Laidlaw
- Legislators
 - Founded NCTC
 - Initial studies on cost allocation
 - 2009 proposal

Stakeholders

STAKEHOLDER ROLES, FEEDBACK & CONCERNS (3)

- Electric Utility Companies & Transmission Owners
 - Transmission ownership & development capabilities
 - PSNH
 - NGrid
 - Anbaric
 - New Hampshire Electric Cooperative
- North Country Representatives
 - Fiscal, policy, economic issues as well as other concerns
 - Economic Development Organizations
 - Coos County Commission
 - The General Public



Stakeholders: ISO-NE

STAKEHOLDER ROLES, FEEDBACK AND CONCERNS (3)

- The ISO-NE tariff allows for different cost allocations depending on whether a transmission facility is deemed a pool transmission facility (PTF) or a local transmission facility (LTF).
- Generator interconnections in New England are completed according to the FERC-approved Minimum Interconnection Standard (MIS).
- Under ISO-NE's competitive wholesale electricity market structure, developers of generator projects are responsible for the costs of interconnection studies and any transmission upgrades that ISO-NE determines are necessary to allow a project to interconnect to the grid.
- Every year, ISO-NE works with transmission owners (TOs) in the region to develop a Regional System Plan (RSP). The annual RSP assesses system needs and identifies transmission upgrades that would have regional benefits.

Stakeholders: Developers

STAKEHOLDER ROLES, FEEDBACK AND CONCERNS (3)

- Multiple renewable energy developers are interested in developing renewable energy resources in the State and have projects in the ISO-NE queue. *Some* include:
 - Laidlaw
 - Clean Power Development
 - Noble Environmental Power
 - Wagner Forest Management

Stakeholders: FERC

STAKEHOLDER ROLES, FEEDBACK AND CONCERNS (3)

- Order No. 888 requires all transmission owners to provide transmission service to all eligible customers on a non-discriminatory basis pursuant to a tariff on file at the FERC.
- FERC has approved a number of tariffs which encompass a number of transmission cost allocation approaches.
- On June 17, 2010, FERC issued a notice of proposed rulemaking
 - Intent is to align transmission planning and cost allocation procedures.
 - Considers new rules that address transmission development related to public policy initiatives.
 - Proposed rules may not have a significant impact on the Coos Loop.
 - ISO-NE has an open and transparent transmission planning process for evaluation of transmission system needs based on considerations of reliability and market efficiency in which interested stakeholders may participate.
 - The proposed rule would simply require ISO-NE and the TOs to amend transmission planning processes to provide explicitly for consideration of public policy requirements. It would not necessarily affect the result of the transmission planning processes.
 - A final rule may not be issued until late winter or early spring 2011

Stakeholder Input: Development Barriers

STAKEHOLDER ROLES, FEEDBACK AND CONCERNS (3)

- Cost recovery: Need to know, how to recover costs and who from.
- Justifying investments: Reliable customer commitments are key.
- Potential transmission customers: Renewable power generators.
 - Transmission development risky before renewable projects are complete. (Stranded costs possible; risk increases with more projects)
- Chicken-and-egg problem: Who builds first?
 - Developers more likely to commit where they know transmission capacity is available.
 - Access to transmission varies; a small subset may sufficiently connect to existing Loop.
- Public entities can be good partners (access to good credit).
 - Longer the contract, lower the rate due to reduced risk.
- In theory, under a market-based system, RECS demand should drive developers to build and to upgrade transmission where it is needed and economically viable.
- Approaches to resolve were noted:
 - Generators pay transmission costs down as they come online (CA).
 - Contract with a State-sanctioned authority: firm transmission rights for payment through fixed tariff.

Stakeholder Input: Benefits & Costs

STAKEHOLDER ROLES, FEEDBACK AND CONCERNS (3)

- **Benefits**

- Local job stimulation: Jobs increase for North Country.
- Tax payments: Tax payments or payment in lieu of taxes.
- Increased fuel independence: fewer foreign fuel sources used.
- Achievement of state clean energy targets: enabling clean energy resources helps meet clean energy goals.
- Use of local resources: enabling NH resources could keep RECS revenue.
- Cheaper power: believe using local renewable resources could lower electricity prices.

- **Costs**

- Adverse Tourism Impacts. potential environmental & aesthetic degradation, (scenic vistas altered or traffic increased). No master planning in place for zoning communities in the North Country.
- Adverse Impact on Property Values. Similar to above.
- Resource Extraction & Exportation. local resources would be used to generate power for export though they could be used in ways with more direct benefit for local residents.

General Cost Allocation Methodologies

COST ALLOCATION METHODOLOGIES (4)

- Five generally accepted methodologies are used to allocate transmission expansion costs.
- Many of these are administered within a region by transmission planning organizations.

Methodology	Description
License Plate	Ratepayers pay transmission rates based on the costs of transmission in the transmission pricing zones in which they are located, but are able to utilize the entire system after based on payment of such rates.
Postage Stamp	Costs are recovered uniformly from all customers in a region, such as defined by an ISO or RTO, where the transmission was built.
Beneficiary Pays	Costs are allocated among groups of customers based on the perceived proportionate benefits accruing to each group. Various criteria and formulae exist to determine the benefits.
Direct Assignment	Transmission costs associated with interconnecting a generator to a transmission line or other transmission service requests are assigned to the entity requesting service.
Commercial Investment	Transmission developers recover their commercial transmission investment costs other than through regulated tariffs. Typically, this involved either selling capacity to transmission customers, usually generators, through negotiated rates. Such developers could be investor-owned utilities (IOUs) or third parties, depending on state and regional

General Cost Allocation Methodologies

COST ALLOCATION METHODOLOGIES (4)

- Open Season: Used initially to allocate long-term transmission rights and costs. Developers revenues are based on bidding results.
- Anchor Tenant with Open Season: ... *financial commitments made by anchor customers prior to an open season provide crucial early support and certainty to merchant transmission developers, which enables them to gain the critical mass necessary to develop these projects.*
- Participant Funding: The transmission customer provides funding in advance for transmission construction. (Owner funding: owner finances construction and recovers funds through transmission rates).
- Participant Funding with Priority Rights: Capacity is pre-sold to a generation owner on a long-term basis at cost-based rates to be established in the future. (Other customers must be given same offer).
- Purchase Power Agreements / Long Term Contracts: Legal contracts to buy and sell energy which specify amounts, prices and time period). Longer duration PPA's reduce financing costs more.
- Cluster Studies / Renewable Zones: To circumvent “chicken-and-egg” problem, studies identify areas where transmission development could readily be aligned with economic renewable resources.

Cost Allocation Examples

COST ALLOCATION METHODOLOGIES (4)

- Approaches by region and state, distinguishing how each one addresses “financing” or “who pays.”
- A variety of approaches are used to address both the questions of who will pay transmission costs as well as how the costs will be paid (e.g., how it will be financed).
- However, the issue of financing is not always addressed specifically.

Application	"Who Pays" Approach	Approach to Addressing Financial Barriers
ERCOT	Postage Stamp	Pre-Approved & Costed; 10% Commitment
SPP	Postage Stamp	Not directly
BPA	Direct Assignment	Transmission Agreement, Open Season
NYISO	License Plate	Not directly addressed
CAISO	Direct Assignment	Postage Stamp Up Front
PJM	Postage Stamp & License Plate	Not directly addressed
MISO	Beneficiary Pays & Postage Stamp	Not directly addressed
ID-WY-MT	Merchant	Open season; Anchor tenant
NTTG	Merchant	Open season; Anchor tenant
KS, WY, IA, ND, SD, CO, NM	Infr / Trans Authority	Varies

Cost Allocations Approaches in NH

TRANSMISSION COST APPLICATIONS IN NEW HAMPSHIRE (5)

Approach	Project Costs & Risks
Postage Stamp	Ratepayers
Direct Assignment	Generation Developers
License Plate	Ratepayers
Beneficiary Pays	Beneficiaries (combination of groups)
Commercial Investments	Transmission Developers

- Requires changes in tariff
- Need to address impediments
- Requires changes in tariff
- Requires changes in tariff
- Need to address impediments

Approach	Cost	Risk
CAISO	Generation Developers	Ratepayers
ERCOT	Ratepayers	Ratepayers
ISO-NE	Generation Developers / Commercial Investors	Generation Developers / Commercial Investors
MISO	Ratepayers	Ratepayers
NYISO	Generation Developers / Commercial Investors	Generation Developers / Commercial Investors
PJM	Generation Developers / Commercial Investors	Generation Developers / Commercial Investors
SPP	Ratepayers	Ratepayers

- Allocates risk to ratepayers
- Allocates costs to ratepayers
- Allocates costs to ratepayers & developers
- Similar to ISO-NE
- Similar to ISO-NE
- Cost-share not necessarily relevant to NH

Cost Allocations Approaches in NH

TRANSMISSION COST APPLICATIONS IN NEW HAMPSHIRE (5)

- **Rate-based cost allocation implementation**
- Must specify the ratepayers from whom the costs will be recovered.
- ISO-NE has a tariff for transmission over local transmission facilities (LTFs). Electricity rate adjustments associated with upgrades to the Coos Loop would likely go into the appropriate provider's stub tariff, and be recovered by the use of their system.
 - A similar example is a subpart of the Northeast Utilities tariff that relates specifically to south eastern CT for coverage of transmission development in the region.
- By isolating a sub-group of ratepayers, the rest of New England does not cover these costs. In order to make this adjustment to the tariff, a FERC filing would be required.

Ranking & Suggested Approaches

TRANSMISSION COST APPLICATIONS IN NEW HAMPSHIRE (5)

- **Metrics**

- Public Support
- Ratepayer Impact
- Generator Impact
- Regulatory viability and support
- Timing and ease of implementation

- **Considerations**

- Stakeholders indicated resistance to increasing rates
 - promotion of transmission development and renewable energy in the North Country perceived as a state policy-based initiative, with some potential indirect benefits to the North Country
- Non-rate-based approaches rank higher in timing and ease of implementation and regulatory viability and support
 - entails mechanisms already used
 - fewer entities involved in approval process
 - But... depends on legislative process and the ability to pass the required legislation to authorize funds and responsibilities.

Cost Allocations Approaches in NH

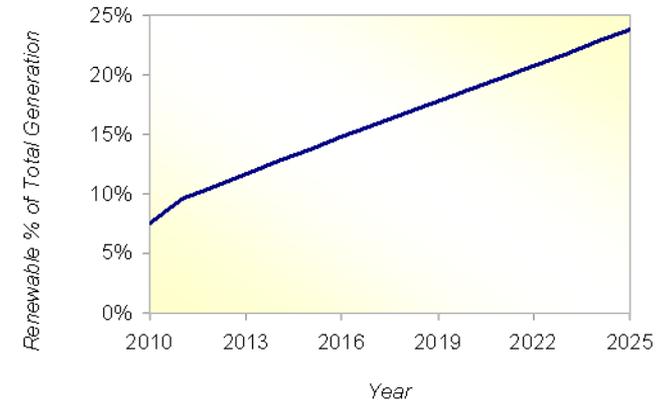
TRANSMISSION COST APPLICATIONS IN NEW HAMPSHIRE (5)

- **High value tools to develop transmission in northern New Hampshire**
 - Purchase Power Agreements
 - Transmission Service Agreements
 - Anchor Tenant or Open Auction
 - Participant Funding
 - Transmission Authority
 - Up-Front Loans with Repayment by Generators
- **High value, but of limited benefit in North Country** (implementation time: 

Benefits

FINANCIAL STUDIES AND ANALYSES (6)

- Renewable energy goals
 - RPS mandates fourfold increase in % renewable by 2025.
- State Energy Consumption goals
- Economic Development
 - Tax revenue
 - Jobs
 - Short-term development and construction
 - Long-term operation and maintenance
- Reliability Benefits
- Energy Independence / Fuel Diversity



Costs

FINANCIAL STUDIES AND ANALYSES (6)

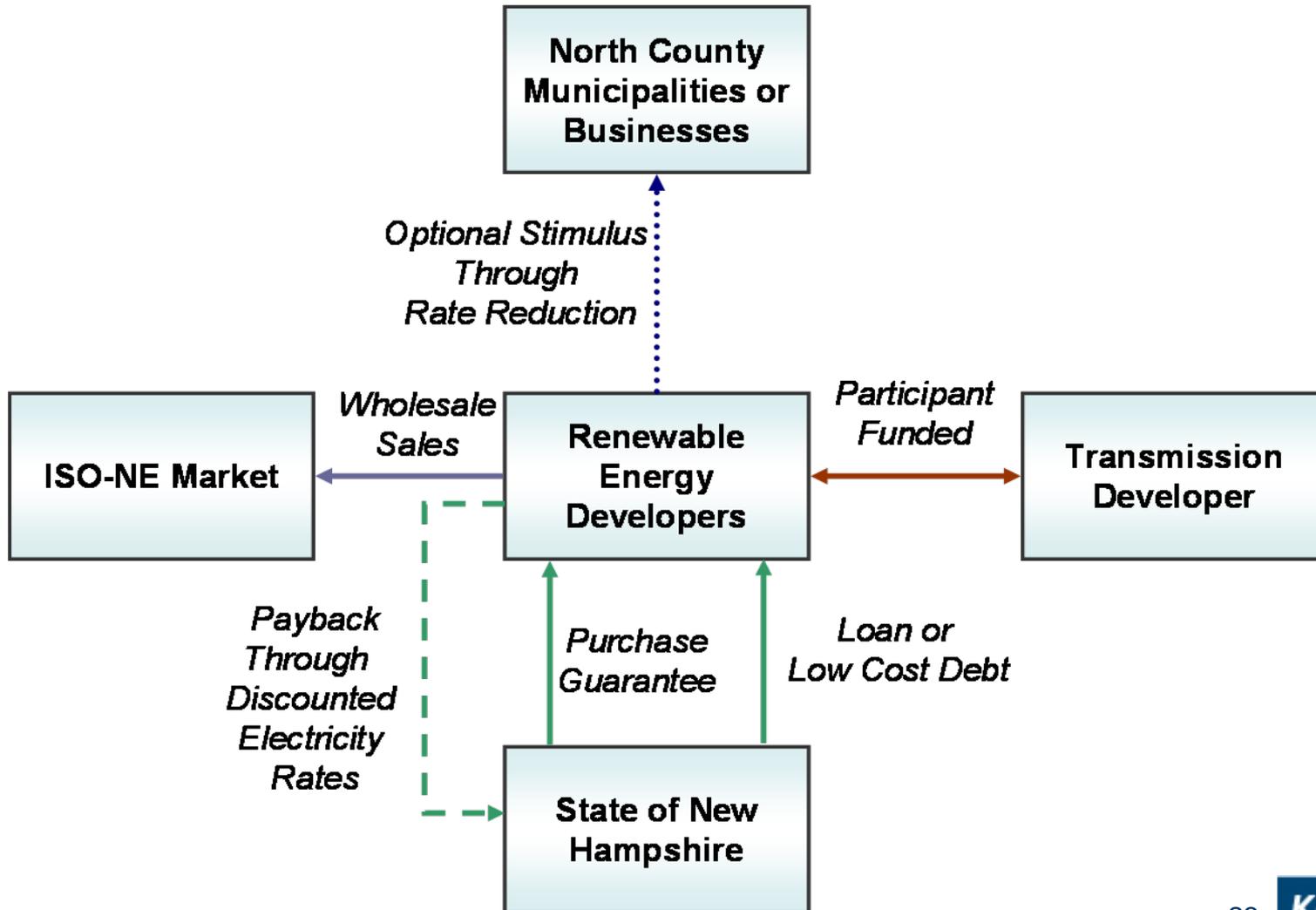
- Financing
 - Can range from 1.5% to 6% of project cost.
 - Reducing risk can lower overall project costs
 - Financing costs are likely factored into electricity prices offered by a developer. The higher the debt level, the more developers may need to charge for their commodity.
- Relative costs by design
 - Transmission connection costs can vary by the amounts of capacities being considered.
 - A piecemeal, incremental approach to transmission development could come at a greater cost than a plan that considers the full potential under a single design.
- Electricity Prices
 - According to PSNH, the transmission component of their electricity rates constitutes around 10%.

Estimated Average Residential Electricity Rates

Company Name	Rate (\$/kWh)
United Illuminating	0.24
Fitchburg Gas & Electric Co.	0.20
Connecticut Light & Power Co.	0.20
New Hampshire COOP*	0.20
Commonwealth Electric	0.18
Bangor - Hydro	0.17
Boston Edison	0.17
Public Service Co. of NH	0.17
Narragansett Electric Co.	0.16
W. Massachusetts Electric Co.	0.16
Central Vermont Public Service	0.16
Central Maine Power*	0.15
Unitil Energy Systems Inc	0.15
Massachusetts Electric Co.	0.14
Granite State Electric	0.13
<i>New England Average Bill Amount</i>	<i>0.17</i>

Action Plan – Proposed Framework

FRAMEWORK FOR AN ACTION PLAN (7)



Action Plan Responsibilities

FRAMEWORK FOR AN ACTION PLAN (7)

- **The State would...**
 - provide an up-front loan or low-cost debt to renewable energy developers to assist with project financing.
 - procure power from the renewable energy developers less than current rate.
 - Any loans or subsidies would then be paid back to the State over time through discounted electricity rates
 - Over time, through reduced rate energy purchases, the State would recover the value of its payments to the renewable energy developers
- **Renewable energy developers would...**
 - negotiate a transmission service agreement with the transmission developer to provide firm transmission rights
- **Transmission owners would...**
 - work through the required processes to make transmission system upgrades

Action Plan – Cost Sensitivities

FRAMEWORK FOR AN ACTION PLAN (7)

- The recommended approach to cost allocation in northern NH would depend on a number of factors,
 - State’s projected energy consumption,
 - Renewable energy developers’ price to produce,
 - The cost of the transmission upgrade
 - Where development costs exceed the amount the State is able to provide and have a reasonable payback period, other approaches such as State or private bonds could help.
- Increases in transmission costs may affect what combination of approaches the State pursues.
- The State or a separate entity (e.g., transmission authority) would need to assess minimum funding needed to enable development
 - Information about renewable developer financing is not generally available, is difficult to assess in many cases, and is not generalizable
 - This should be done in a way that does not create barriers greater than the ones trying to address

Alternative Options

FRAMEWORK FOR AN ACTION PLAN (7)

- Alternative direct support for renewable energy
 - VT SPEED: Spreads costs of electricity supplied by favored renewable energy developers across all ratepayers.
 - VT Public Service Board establishes default prices (above market) for a standard offer to purchase electricity from specified renewable energy resources.
 - Power is sold by developers to a state-owned corporation (VEPPI) who resells it to each utility, based on its respective load ratio share. Electric utilities are required to participate, including rural electric cooperatives & muni's.
 - Power purchase costs are passed through by the utilities to its retail electric service customers.
 - Applied in NH: Might help facilitate payment for transmission cost upgrades.
 - NHPUC could set the default offer prices at a level that would be sufficient to encourage renewable energy developers to go forward with their projects after consideration of the cost of transmission enhancements for which they would be responsible.

Alternative Options

FRAMEWORK FOR AN ACTION PLAN (7)

- CAISO ratebase approach
 - up-front costs paid by ratepayer, paid back by generators as they come online
 - An alternative where the State may not be able to provide up-front loans or make direct subsidies.
 - Could limit the burden on ratepayers,
 - making the burden temporary
 - limiting the amount of costs covered by ratepayers.
 - Requires approval by FERC.
 - Requires determining which ratepayers

Q&A Session

Your Questions and Comments?