



Electricity Industry

Connecticut's Public Benefit Standard:

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Working Group (CT Public Act 02-95)
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Overview of Remarks:

- Public benefit standard for underground or underwater transmission lines
 - statutory foundation
 - public benefits for reliability and competitive market
 - case study: Cross Sound Cable
 - other possible public benefits
 - public benefit versus public need
- Analyzing the role of transmission
 - different modeling approaches
 - common elements of different modeling approaches

CT Statutory Requirements – Context for Public Benefit

- (c) (1) THE COUNCIL SHALL NOT GRANT A CERTIFICATE FOR A FACILITY DESCRIBED IN SUBDIVISION (3) OF SUBSECTION (a) OF SECTION 16-50i, EITHER AS PROPOSED OR AS MODIFIED BY THE COUNCIL, UNLESS IT FINDS AND DETERMINES: (A) A PUBLIC BENEFIT FOR THE FACILITY; (B) THE NATURE OF THE PROBABLE ENVIRONMENTAL IMPACT, INCLUDING A SPECIFICATION OF EVERY SIGNIFICANT ADVERSE AND BENEFICIAL EFFECT THAT, WHETHER ALONE OR CUMULATIVELY WITH OTHER EFFECTS, CONFLICTS WITH THE POLICIES OF THE STATE CONCERNING THE NATURAL ENVIRONMENT, ECOLOGICAL BALANCE, PUBLIC HEALTH AND SAFETY, SCENIC, HISTORIC AND RECREATIONAL VALUES, FORESTS AND PARKS, AIR AND WATER PURITY AND FISH AND WILDLIFE; AND (C) WHY THE ADVERSE EFFECTS OR CONFLICTS REFERRED TO IN SUBPARAGRAPH (B) OF THIS SUBDIVISION ARE NOT SUFFICIENT REASON TO DENY THE APPLICATION. FOR PURPOSES OF SUBPARAGRAPH (A) OF THIS SUBDIVISION, A PUBLIC BENEFIT EXISTS IF SUCH A FACILITY IS NECESSARY FOR THE RELIABILITY OF THE ELECTRIC POWER SUPPLY OF THE STATE OR FOR A COMPETITIVE MARKET FOR ELECTRICITY. **(2) THE COUNCIL SHALL NOT GRANT A CERTIFICATE FOR A FACILITY DESCRIBED IN SUBDIVISION (1) OF SUBSECTION (a) OF SECTION 16-50i WHICH IS SUBSTANTIALLY UNDERGROUND OR UNDERWATER EXCEPT WHERE SUCH FACILITIES INTERCONNECT WITH EXISTING OVERHEAD FACILITIES, EITHER AS PROPOSED OR AS MODIFIED BY THE COUNCIL, UNLESS IT FINDS AND DETERMINES: (A) A PUBLIC BENEFIT FOR THE FACILITY;** (B) THE NATURE OF THE PROBABLE ENVIRONMENTAL IMPACT, INCLUDING A SPECIFICATION OF EVERY SINGLE ADVERSE AND BENEFICIAL EFFECT THAT, WHETHER ALONE OR CUMULATIVELY WITH OTHER EFFECTS, CONFLICT WITH THE POLICIES OF THE STATE CONCERNING THE NATURAL ENVIRONMENT, ECOLOGICAL BALANCE, PUBLIC HEALTH AND SAFETY, SCENIC, HISTORIC AND RECREATIONAL VALUES, FORESTS AND PARKS, AIR AND PURITY AND FISH AND WILDLIFE; (C) WHY THE ADVERSE EFFECTS OR CONFLICTS REFERRED TO IN SUBPARAGRAPH (B) OF THIS SUBDIVISION ARE NOT SUFFICIENT REASON TO DENY THE APPLICATION; (D) IN THE CASE OF A NEW ELECTRIC TRANSMISSION LINE, (i) WHAT PART, IF ANY, OF THE FACILITY SHALL BE LOCATED OVERHEAD, (ii) THAT THE FACILITY CONFORMS TO A LONG-RANGE PLAN FOR EXPANSION OF THE ELECTRIC POWER GRID OF THE ELECTRIC SYSTEMS SERVING THE STATE AND INTERCONNECTED UTILITY SYSTEMS AND WILL SERVE THE INTERESTS OF ELECTRIC SYSTEM ECONOMY AND RELIABILITY, AND (iii) THAT THE OVERHEAD PORTIONS OF THE FACILITY, IF ANY, ARE COST-EFFECTIVE AND THE MOST APPROPRIATE ALTERNATIVE BASED ON A LIFE-CYCLE COST ANALYSIS OF THE FACILITY AND UNDERGROUND ALTERNATIVES TO SUCH FACILITY AND ARE CONSISTENT WITH THE PURPOSES OF THIS CHAPTER, WITH SUCH REGULATIONS AS THE COUNCIL MAY ADOPT PURSUANT TO SUBSECTION (a) OF SECTION 16-50t, AND WITH THE FEDERAL ENERGY REGULATORY COMMISSION "GUIDELINES FOR THE PROTECTION OF NATURAL HISTORIC SCENIC AND RECREATIONAL VALUES IN THE DESIGN AND LOCATION OF RIGHTS-OF-WAY AND TRANSMISSION FACILITIES" OR ANY OTHER SUCCESSOR GUIDELINES AND ANY OTHER APPLICABLE FEDERAL GUIDELINES; AND (E) IN THE CASE OF AN ELECTRIC OR FUEL TRANSMISSION LINE, THAT THE LOCATION OF THE LINE WILL NOT POSE AN UNDUE HAZARD TO PERSONS OR PROPERTY ALONG THE AREA TRAVERSED BY THE LINE. **FOR PURPOSES OF SUBPARAGRAPH (A) OF THIS SUBDIVISION, A PUBLIC BENEFIT EXISTS IF SUCH A FACILITY IS NECESSARY FOR THE RELIABILITY OF THE ELECTRIC POWER SUPPLY OF THE STATE OR FOR THE DEVELOPMENT OF A COMPETITIVE MARKET FOR ELECTRICITY.**

Public Benefits – Statutory Foundation

- THE COUNCIL SHALL NOT GRANT A CERTIFICATE FOR A FACILITY... WHICH IS SUBSTANTIALLY UNDERGROUND OR UNDERWATER ... UNLESS IT FINDS AND DETERMINES: (A) A PUBLIC BENEFIT FOR THE FACILITY.
- A PUBLIC BENEFIT EXISTS IF SUCH A FACILITY IS NECESSARY FOR THE RELIABILITY OF THE ELECTRIC POWER SUPPLY OF THE STATE OR FOR THE DEVELOPMENT OF A COMPETITIVE MARKET FOR ELECTRICITY.

Public Benefits – Case Study

TransEnergie Cross Sound Cable

- proposal to construct interconnection between CT and NY
- 2001 application to CT Siting Board
- approved in January 2002
- underwater – Long Island Sound
- merchant project, not in CT utility customers' rates
- “case of first impression”
- public benefit case:
 - necessary for the reliability of electric power supply in CT
 - necessary for the development of competitive market for electricity in CT.

Public Benefits – Case Study

Cross Sound Cable: The case for “public benefits”

– Reliability Benefits

- Insurance policy, reserve sharing, lower chance of an interruption in service
- supports meeting reliability standards (“loss of load probabilities”) across all hours
- economic value of avoided blackouts/interruptions of service

– Competition Benefits

- enables economic power sales/purchases that could not otherwise occur
- existence of willing buyer and willing seller for service(s) provided
- addition of new market participants in CT/NE and in NY
- consistency with state and federal policy to rely on market forces to provide efficient electric supply
- Increased at-risk capital investment in CT’s transmission infrastructure.

Public Benefits – Case Study

Cross Sound Cable: Siting Council Order – “benefits”:

- Value of interregional cooperation and interconnections between regions
- Enhancement of inter-regional electric transmission infrastructure
- Improvement of reliability and efficiencies of the CT and NY electric systems
- Benefits of proposed cable system may not be equal at this time (between NY and CT), but “preparedness and cooperation are in the best interest of the State, region, and the nation”
- Unknown price impacts in NE (due to numerous factors affecting price)
- Open competitive market for electricity, enhanced by the increased capability for trade, will result in increased private investment in infrastructure, and lower electricity costs for the region.

Public Benefits – Case Study

Cross Sound Cable: Siting Council Order - Findings

- “the **effects** associated with the construction, operation, and maintenance of a HVDC submarine electric transmission and fiber optic cable system from New Haven, Connecticut to Brookhaven, New York... **are not disproportionate either alone or cumulatively with other effects when compared to benefit**, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application. Therefore, the Council will issue a Certificate of Environmental Compatibility and Public Need...”

Public Benefits – Public Benefit Standard(s) of Review?

- Scope?
 - limited only to (a) reliability or (b) competition ?
 - include (a) reliability, (b) competition, and (c) other benefits ?
- Conditionality?
 - “necessary to..” = “essential to...” ? (needed for minimum reliability? needed for even better reliability? local reliability? regional bulk power reliability?)
 - “necessary to..” = “enhances the accomplishment of..” ?
- Balancing test?
 - benefits sufficient to outweigh individual or cumulative adverse impacts?

Public Benefits – Public Benefit Standard(s) of Review?

- Difference between “need” and “benefit”
 - traditional public “need” (public convenience, necessity) – reliability *and* economic need?
 - new public “benefit” – reliability, competition, others?
- Strictness of standard for goals of statute?
 - facilitate market proposals (easier than old standard of “need”)?
 - control market proposals (tougher than old standard of “need”)?
 - comparable “need” and “benefit” (reliability & economic benefit both in traditional “need” determinations)?
- Relative benefits or absolute benefits?
 - what alternatives for making comparisons with the proposed project
 - actual project alternatives?
 - hypothetical plans?
 - “do nothing” alternative?

Public benefits – other benefits?

- Hypothetical examples of other benefits:
 - visual and benefits of placing a line underground instead of above ground?
 - avoidance of environmental impacts of a proposed new generation (large or distributed) where the alternative is a transmission line that gives access to cleaner power generation?
 - avoidance of environmental impacts of existing generation, for similar reasons?
 - economic savings associated with access to lower cost supplies?
 - avoidance of higher costs of above-ground transmission route?
 - reliability of electric system(s) in other states?
 - other?

Analyzing the role of transmission:

- **Examples - methods of analyzing need and benefit:**
 - primarily economic analyses (with & without the project):
 - comparison of location-specific energy prices in different regions
 - simulation of market performance (annual energy savings)
 - analysis of concentration of ownership of assets
 - analysis of barriers to entry in markets
 - value of economic benefits to consumers of avoiding blackouts
 - primarily reliability analyses (with & without the project):
 - Snap shots of load flows (AC, DC)
 - loss of load probability analyses
 - analysis of frequency of interruptions, emergency actions

Analyzing the role of transmission:

Common elements of studies:

- demand forecasts (energy, peak, load curve, location, “at risk”)
- existing supply resources (power plants, demand-side resources) – (size, location, technology, ownership, etc.)
- existing transmission system (location, capacity, technology)
- changes in supply resources (new plants, retired plants, etc.)

Special issues:

- economic cost of “lost load”
- fuel price forecasts
- economic growth forecasts
- market structure issues
- reliability standards (e.g., 1 in 10 year LOLP)