



# **Transacting Generation Attributes Across Market Boundaries:**

## ***Eligibility Options & Implications***

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# Based on....

- *"Transacting Generation Attributes Across Market Boundaries: Compatible Information Systems and the Treatment of Imports and Exports"* by Robert Grace and Ryan Wiser (11/02)
  - Published as Lawrence Berkeley National Lab Report
- Research funded by:
  - US DOE
  - New York State Energy Research and Development Authority (NYSERDA)
- Assessed issues generically
- Broad stakeholder input (interviews & review)
- Report Available At...
  - Executive Summary: [http://eetd.lbl.gov/ea/EMS/reports/51703\\_exsum.pdf](http://eetd.lbl.gov/ea/EMS/reports/51703_exsum.pdf)
  - Full report: <http://eetd.lbl.gov/ea/EMS/reports/51703.pdf>



# Overview

- Policy & market context
- Why does it matter?
- Approaches to addressing generation attribute imports and exports
- Information System Compatibility
- Implications for New York
- Conclusions



# Policy & Market Context

- States establishing policies & markets to increase role of renewable energy, improve electric sector emission profile:
  - Source disclosure (source & emissions)
  - RPS
  - emission performance standards (EPS)
  - voluntary markets for “green” power (competitive & regulated)
  - Air emission markets (not addressed directly here)
- All rely on ability to differentiate generation attributes
- Growing interest in trading generation attributes across electricity market borders (with or without electricity)
- Regional accounting/verification systems evolving
- NY needs to address borders for RPS eligibility, accounting



# Why Does it Matter? [1]

- Treatment of cross-border transaction eligibility dictates:
  - Location and cost of renewables that get built
  - Location of benefits
- Generator Perspective:
  - Lack of clarity as to what generation is recognized in a market stifles investment in renewable generation (locally and elsewhere), *despite* presence of strong demand drivers
  - Resolution is critical to the commercial interests of specific projects proponents
- Policymaker Perspective:
  - Resolution is critical to ability to meet policy objectives, build more renewable & environmentally preferable generation
    - Impacts regional resource diversity, cost stability, reliability, economic development



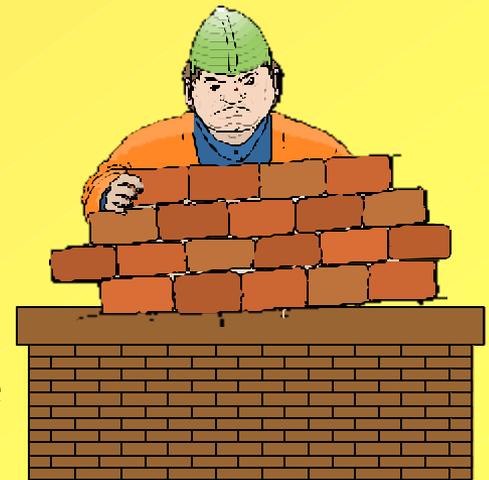
# Why Does it Matter? [2]

- Regulator Perspective:
  - Challenging for regulators to verify unique attribute claims in the absence of established methods to properly account for cross-border attribute sales
  - Developing clear rules for imports, exports:
    - minimizes potential for “double-counting”
    - limits “green-washing” or sham transactions that appear to achieve compliance but evade underlying policy objectives
- Obligated entities perspectives:
  - Eligibility treatment dictates both absolute and relative cost of compliance



# Issues are Complex & Contentious

- Alternate Title: "Border Wars"
- Research (involving broad range of stakeholder input) revealed a range of often-conflicting positions, must distinguish:
  - reasoned policy positions from
  - competing commercial interests
- Pervasive tension between:
  - Desire for broader access to markets that encourages more renewable energy generation at lower costs, and
  - desire to assure at least some renewables are built locally to achieve local policy goals or purchaser objectives





# Reasons for High Walls, Barriers to Imports

- **Policy:**

- Distant renewable plants may not bring same level of local benefits as plants those nearby or upwind
- Are objectives of policy or purchaser primarily local (e.g. air quality; economic or reliability)?

- **Generators:**

- Local generation may seek protection from competition from distant generators with lower cost structure, more favorable resource or policy

- **Practical:**

- Inconsistent accounting systems across border that cannot assure unique use, prevent green-washing





# Reasons for Broadly-Defined Geographic Scope

- **Practical:**
  - Renewable generators locate where resource is available, often remote from customers
  - Environmental benefits don't coincide with political borders or electricity delivery
- **Policy:**
  - Broader access to markets = more renewable generation at lower costs
  - Least-cost compliance with renewables purchase mandates
  - Are objectives driven primarily by climate change concerns?
- **Sellers:**
  - Want access to markets without extra transaction costs
- **Buyers:**
  - Electricity suppliers & end-use customers may seek renewables where they are most cost-effective, especially when comparable plants are not available locally (or only at high costs)





# Approaches to Addressing Generation Attribute Imports & Exports

- Background Concepts
- Alternate Approaches:
  - Geographic Eligibility
  - Benefits-Driven Eligibility
  - Delivered Energy Eligibility
- Implications & (Generic) Recommendations



# Background Concepts

- Transactions cross boundaries from source to sink “**market area**”
  - Market Area reflects how markets aggregate and organize themselves, e.g. an electric control area or power pool (e.g. NEPOOL, NYISO, PJM)
    - **Caution:** market areas are transient and environmental issues don't necessarily track market areas
- When attribute requirements are associated with *all* retail electricity sales (such as comprehensive uniform source disclosure mandates), quantity of energy & attributes in a market area must be roughly equal (*conservation of attributes*)
  - Moving attributes without corresponding energy confounds meaningful calculation of source proportions, average % characteristics of supply mix
  - Attribute imports under such circumstances require some degree of electricity deliverability is suggested to achieve a nexus to retail sales
  - ***NY has comprehensive disclosure requirements – so accounting for RPS must recognize this as a constraint***



# Geographic Eligibility

- Attributes from generators located within the eligible region are recognized
- All internal borders are ignored
- All generation outside the eligibility region is not eligible (e.g. no imports allowed).
- Several variations relating to scope of eligible region:
  - ***unconstrained geographic eligibility***: generation could be eligible anywhere in the nation, the continent or even the world
  - ***super-market geographic eligibility***: generation is considered eligible if the generator is located anywhere within a defined region spanning two or more contiguous market areas, selected based on environmental benefits or transmission feasibility [NY + PJM?]
  - ***market area geographic eligibility***: eligibility is limited to any resource within the load's market area. [NY]
  - ***Sub-market area geographic eligibility***: limit eligibility to an even smaller footprint than a market area [capital zone]



# Benefits-Driven Eligibility

- Philosophical opposite of geographic eligibility
  - Recognizes that neither electricity flow nor environmental benefits depend on generator location or to whom output is sold
- Generator eligibility based on case-by-case demonstration of benefits from generator to the sink-area load
  - regardless of location or to whom it sells its power
- Though appealing in concept, may be too complex or burdensome for regulators to implement completely on a case-by-case basis.
  - To simplify, default rules might be established (e.g., geographic eligibility or delivered energy eligibility), with case-by-case eligibility determination for transactions falling outside defaults



# Delivered Energy Eligibility

- Expands upon market-area geographic eligibility:
  - recognizes generation within eligible market area, *plus*
  - attributes from out-of-market generation but only if associated with a cross-boundary energy flow: requires ***displacement in sink market***
- 4 variations result from 2 dimensions:

	Retail Matching	Wholesale Matching
Strict Energy Delivery		
Relaxed Energy Delivery		



# Retail vs. Wholesale Matching

- **Retail** matching requires that REP seeking to use imported attributes also import energy (to its settlement account) from the corresponding source market during same settlement period
  - Unbundling of energy and attributes from out-of-market generators in the sink area is not allowed
  - Constrains REP's options for buying commodity
- **Wholesale** matching expands upon retail matching by also allowing a wholesaler to purchase generation attributes & associated electricity from out-of-market generators.
  - The wholesaler importing energy and attributes can then sell the attributes to REPs, regardless of whether the REP imports electricity or buys energy from the wholesaler
  - more flexible approach; the REP procuring the attributes is not limited to how it can purchase supply
  - NEPOOL GIS uses this approach



# Strict vs. Relaxed Energy Delivery

- **Strict:** attributes can be imported only via a bundled, unit-contingent energy contract, scheduled & transmitted into the sink region
  - Energy matches generator's production: **hourly settlement**
  - ***Virtually identical environmental impact*** to local generator due to ***displacement***
  - Creates most credible nexus to retail electricity sales
  - Particularly well suited to achieving local environmental benefits
  - However, scheduling energy transactions precisely matching production adds transactional costs & operational burdens particularly for intermittent generation
- **Relaxed:** imported attributes must match in quantity a scheduled energy flow over a **broader settlement period** (e.g. monthly or longer)
  - Recognizes limitations of scheduling intermittent (wind) generation precisely
  - Reduced transactional costs and complexities
  - Attribute transactions can be supported despite peak transmission constraints
  - ***Similar environmental impact*** compared to local generator
    - Timing of displacement may cause impact to be similar, greater or less than under strict
    - Some transactions may be viewed by some as less *credible* if energy import schedule departs materially from generator's production profile



# To Import Under Each Delivered Energy Eligibility Variation...

- **Strict energy delivery + retail matching [least flexible]**
  - REP enters *pre-arranged bilateral* contract of *bundled* energy and attributes across border (import matches the unit's production *hourly*)
- **Strict energy delivery + wholesale matching**
  - REP or wholesaler enters prearranged *bilateral* contract of *bundled* energy and attributes across border, but may *unbundle* energy and attributes once within the *sink* market (import matches the unit's production *hourly*)
- **Relaxed energy delivery + retail matching**
  - REP arranges *energy* imports from source market, which may be *matched* with attributes (procured together, or independently) over a broader settlement period. The attribute transaction arranged *prospectively* or *after* the energy transaction flowed
- **Relaxed energy delivery + wholesale matching [most flexible]**
  - REP or wholesaler may *match* an attribute transaction arranged either *prospectively* or *after* the energy flow over a broader settlement period, and may *unbundle* energy and attributes within the sink market area
    - Allows seller to seek buyers after the generation has occurred, as long as corresponding energy was moved across market boundaries
    - Ability to associate attributes with pre-existing energy transactions creates risk of no incremental local displacement



# Reciprocity Driven Exclusions

- Reciprocity Types
  - Reciprocal exposure to competitive pressure (e.g., generation in regulated rate base serving captive customers not eligible; NJ hydro)
  - Reciprocal access (e.g., recognition as source specific attribute)
  - Comparable environmental standards (e.g., NJ MSW)
  - Reciprocal repercussions (e.g., lack of disclosure in source market)
  - Reciprocal policies (e.g., source market has comparable RPS; NJ RE Task Force Recommendations to Governor)
- Some of these do not yet have specific examples of application



# There is No “Right” Answer....

- Best choice among alternative approaches depends on:
  - Specific objectives (often unclear or multiple)
  - The specific renewable attribute demand drivers
  - The need (or lack thereof) for a nexus to retail sales
  - Tradeoffs of accuracy vs. cost vs. complexity
  - The presence of practical constraints (e.g. several generation attributes policies present within the same market area?), and
  - Availability of local resources.
- To avoid conflicts when multiple policies and/or multiple objectives → most restrictive (or local) option, or exceptions
- LBNL/NYSERDA report creates structure for assessment to aid decision makers, and makes recommendations for different circumstances



# Compatible Generation Information Systems

- When generator eligibility beyond a market areas is allowed, is may be contingent on the presence of a compatible generation information system (GIS) or compatible disclosure requirements
  - Must avoid double counting!
- A Compatible GIS would:
  - ensure the veracity and uniqueness of generation source claims,
  - avoid the potential for evading the policy's intent through sham transactions, and
  - assure level playing field for out-of-market and in-market generation
- Required in several jurisdictions, but never specifically defined
- LBNL report defines characteristics of compatible GIS
- "**Compatible Transactions**" that can proceed in the absence of compatible GIS may also be possible



# Bringing it Home: the New York Perspective

- Implications:
  - Where will generation be built to meet various demands?
  - Can *enough* be built to meet demands?
  - What will be the cost?
- Constraints:
  - Attribute Laws in most cases explicitly or implicitly require delivery (displacement) or Compatible GIS
  - comprehensive uniform disclosure (nexus requirement?)



# Examples: NEPOOL and NJ Treatment Today

- New England
  - Conditions require a variation of delivered energy eligibility
    - other options not consistent with laws, or put policies into conflict
  - NEPOOL GIS import rule today
    - Builds on geographic eligibility (market area = NE)
    - Strict delivered energy eligibility + wholesale matching for imports from generation in neighboring markets
      - Source-specific certificates for successfully-scheduled bundled bilateral unit contract
    - Operating rules foresee reopening import treatment when a neighboring market implements compatible GIS
- New Jersey
  - Today: Unclear mixture of geographic (PJM and NY), relaxed energy delivery
  - Future?: Scheduled bundled energy delivery into PJM, with possible expansion to geographic eligibility including NY if NY has comparable RPS<sub>22</sub>



# Conclusions

- Interest is increasing; strong commercial implications
- Objectives matter (often multiple, conflicting, or unclear)
- Tradeoffs abound among and between policy and commercial interests
- Policymakers must evaluate tradeoffs considering:
  - Flexibility to meet demands at least cost, or maximize benefits/\$
  - Clarity & regulatory/market stability (to support financing)
  - Supporting liquid markets
  - Eliminating inefficient barriers
  - Maintaining consistency with local objectives (environmental, reliability, economic), and
  - Feasibility of achieving objectives (can enough be built locally?)



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