



Pure Windsm



Harnessing the Wind to Generate Clean Electricity

DOE/EPA Meeting on Green Tags

December 12, 2000

Madison **Windpower** Project



- Located in Madison County, NY
- Seven 1.65-MW Vestas V-66 turbines
- Expected to produce 24,000 MWH's annually
- Commercial operation began in October 2000
- First customers include Kinko's, Environmental Grantmakers Association, NRDC

Mountain View **Windpower** Project



- Located in San Geronio Pass near Palm Springs, CA
- Announced November 2000
- Seventy-four 600 kW Mitsubishi Turbines
- Expected to produce 178,000 MWH's annually
- Commercial operation expected to begin April 2001

What Are Environmental Certificates?



Electricity = Energy + Environmental Attributes

- Energy: electrons devoid of attributes
- Environmental attributes: non-price characteristics of interest to the market such as:

Fuel type

Emissions

Vintage

Labor

- Certificate: attributes associated with an equivalent amount of energy delivered from a specific generating facility to the grid
 - Commercial vehicle for transacting environmental attributes
 - May be recognized as a tradable commodity



*pure wind*sm

Serial Number

CERTIFICATE

Quantity
1

Flexibility of Certificate Transactions



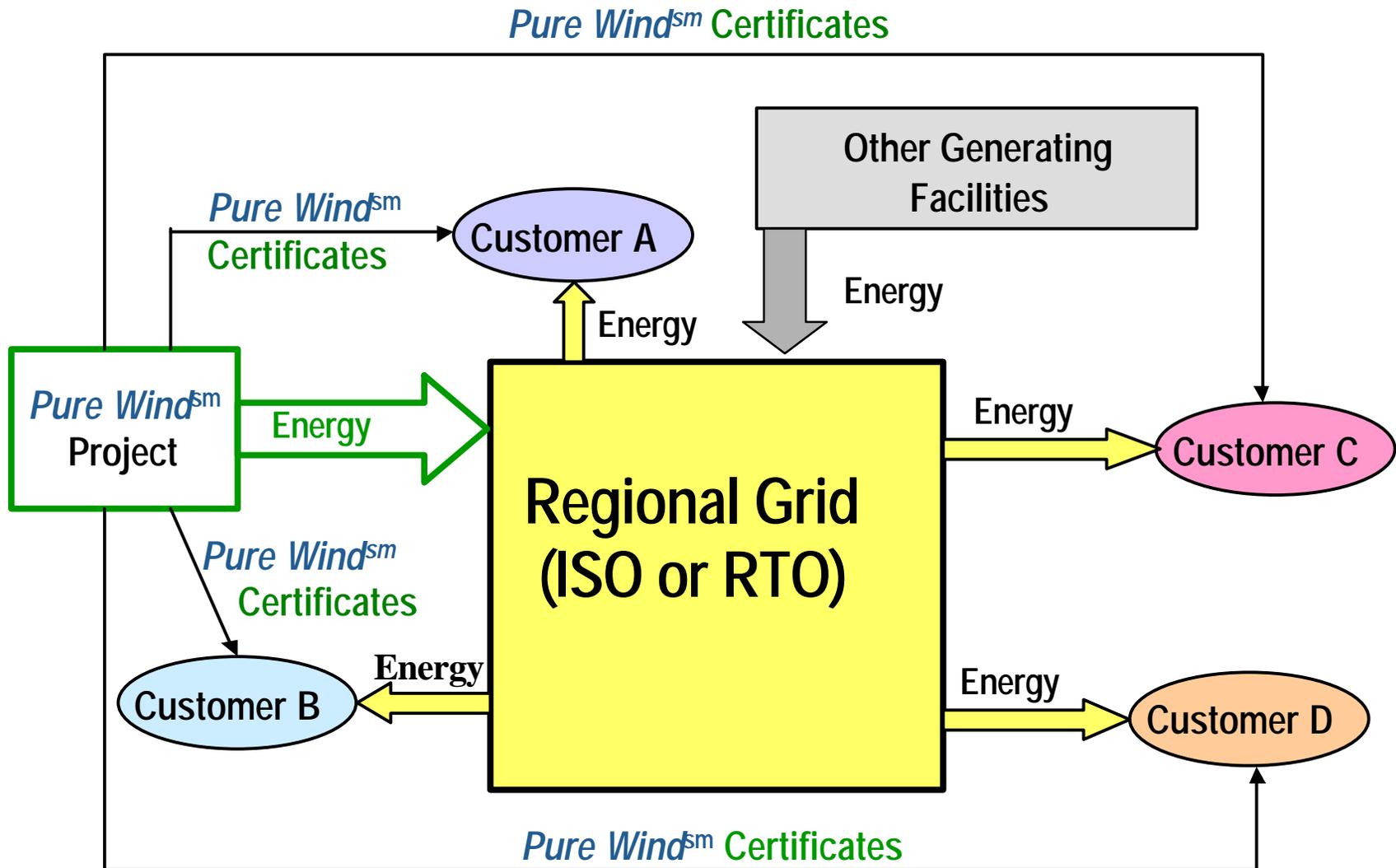
- Can occur without burdening the wholesale market and despite its constraints
- Can be used to demonstrate compliance with regulatory programs -- RPS, GPS, Disclosure Systems
- Can be used to document ownership of emission credits for future trading purposes
 - certificates can be used to calibrate avoided emissions
- Provide auditable trail verifying customer purchases from specific facilities: advertising and marketing claims

The *Pure Wind*sm Program



- *Pure Wind*sm is a brand name and logo
 - servicemark application pending
 - licensing rights granted to some purchasers
- For each MWH of electricity delivered to the grid, a *Pure Wind*sm Certificate is created
- *Pure Wind*sm customers own the attributes of the certificates purchased - including any future tradeable rights
- *Pure Wind*sm projects are sited to maximize environmental, community and other public goals

Pure Windsm Transaction Diagram



Range of *Pure Wind*sm transactions



*Pure Wind*sm bilateral transactions (bundled energy/certificates)

- Within NY
 - no retail market = no interest
 - licensing onerous, high market entry costs
 - wholesale market trades financially, not physically
 - little consumer education
 - wholesale prices generally higher than retail hurdle rate
 - substantial wheeling costs
- Interstate
 - Some interest, but cost and/or physical barriers are daunting
 - Scheduling cross-border sales very difficult
 - Congestion risk is high
 - Wheeling costs are substantial

Range of *Pure Wind*sm transactions



- *Pure Wind*sm conversion transaction
 - Emerging interest on wholesale, retail levels
 - Scheduling less difficult with quarterly v. hourly settlements
 - Congestion risk largely gone
 - Wheeling costs (inter and intra state) substantially reduced
 - Final rules not yet promulgated
- *Pure Wind*sm certificate-only transaction
 - Allows immediate demand to be met while markets, rules evolve
 - Appeals to customers willing to pay transparent premium

Today's Regulatory Landscape



- Multiple programs could rely on certificates
 - RPS, GPS, disclosure
 - verification of marketing claims
 - voluntary certification programs
- But:
 - program designs differ state-to-state
 - verification systems differ state-to-state
 - Without clear regulatory recognition of certificates, consumers are wary

State/Regional Regulatory Landscape



- NY considering limitations that could limit certificate fungibility, destroy potential market
- NY, PJM and New England certificate rules may not be fully compatible - further limiting market for NY renewables
- New England Generation Information System furthest along, but key design issues remain to be resolved:
 - imports/exports
 - quarterly reconciliation of attributes and energy
- GHG reduction benefits not yet monetized through established trading program

What conditions are needed for a Renewable Certificates Market?



- **Consumer Acceptance**
 - establish comfort with certificates as attributes unbundled from energy
 - agree on credible geographic boundaries
 - establish universal terminology
- **Regulatory environment**
 - design program rules to optimize flexibility, especially during transition
 - facilitate “compatible” certificates systems between power pools
 - encourage imports, exports as feasible
 - facilitate development of competitive markets
 - establish GHG emission trading program that “credits” certificates
 - facilitate standardized trading and accounting rules between regions