Palm Beach County Project, LLC

February 9, 2011

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Wind Capital Group

GENTILE HOLLOWAY O'MAHONEY & ASSOCIATES, INC.

Agenda

- Introductions
- Wind Capital Group
- Four basics of a wind farm
- Why Florida?
- Environmental Process
- How we build a wind farm

Wind Capital Group

- Independently developed and sold 600 MW of wind farms
- Built another 163 MW in partnership with John Deere
- Built, own and operate a 150 MW facility at Lost Creek, MO.

  $340 Million investment – largest project in State
- HQ in St Louis, Missouri
- Recognized by the industry and the U.S. Government as a leader in wind energy

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Energy Generation Comparison

Environmental Impacts of Electricity Sources

	Wind	Nuclear	Coal	Natural Gas
Global Warming Pollution	None	None	Yes	Yes
Air Pollution	None	None	Yes	Limited
Mercury	None	None	Yes	None
Mining/Extraction	None	Yes	Yes	Yes
Waste	None	Yes	Yes	None
Water Use	None	Yes	Yes	Yes
Habitat Impacts	Yes	Yes	Yes	Yes

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Four Basics of Wind

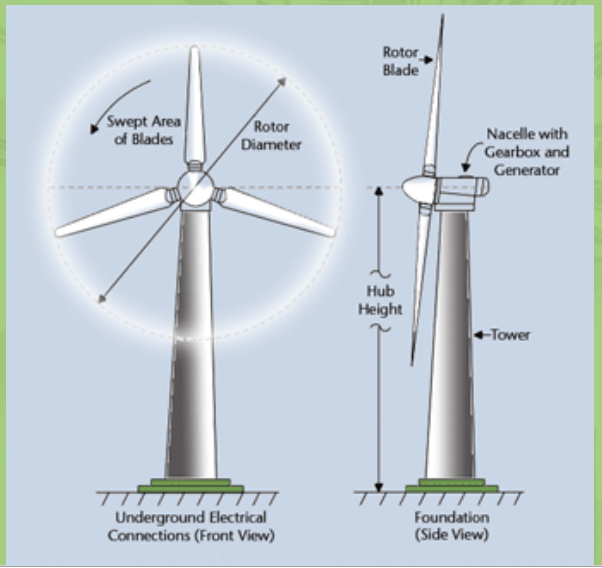
- Wind Resource
- Land
- Transmission
- Market

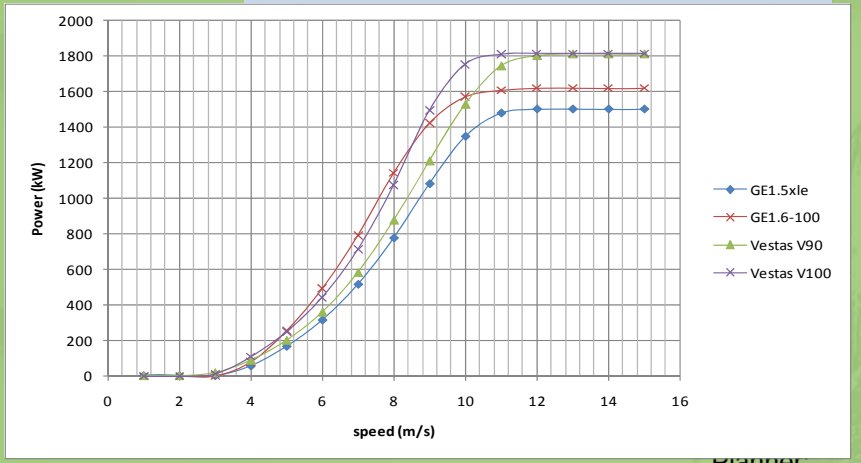
Wind in Florida ?

- Accepted wisdom is that wind is not economic in Florida, so what's changed?
- Technology enhancement
  - Turbine developments
    - Larger rotor blades
    - Taller Turbines
  - Better prospecting tools
    - Meso-scaling mapping
    - GIS site screening

Wind Turbine Performance

- Performance of Wind Turbines depends on:
  - Average Wind Speed at the Site
  - Rotor Size
  - Generator Size
  - Hub Height
  - Wind Farm Layout
  - Air density





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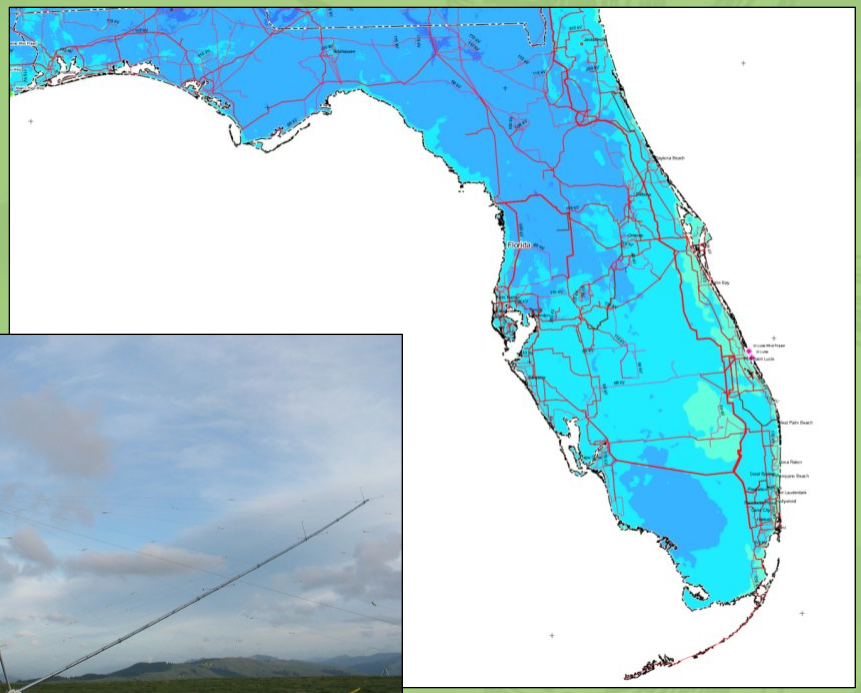
Wind Prospecting Process

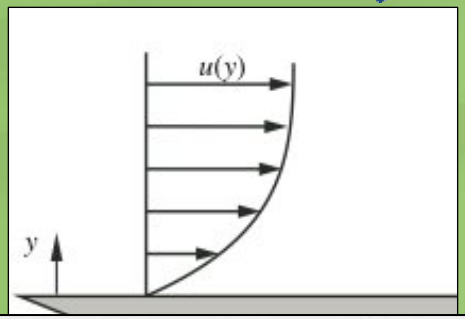
- Regional Development Teams
- Meteorology
- Transmission
- Environmental
- Siting and Mapping
- Real Estate Leasing
- Community Relations
- Government Relations
- Power Sales



Understanding Boundary Layer Flows – The Physics

- Factors that determine available wind speed are:
  - Topography
  - Shear layers

$$\frac{V_1}{V_2} = \left(\frac{h_1}{h_2}\right)^n$$



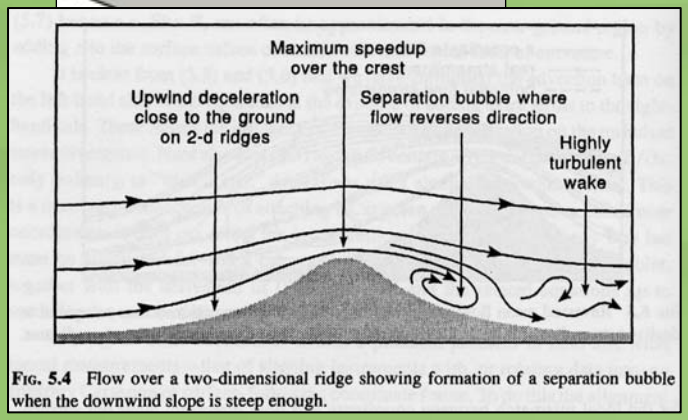
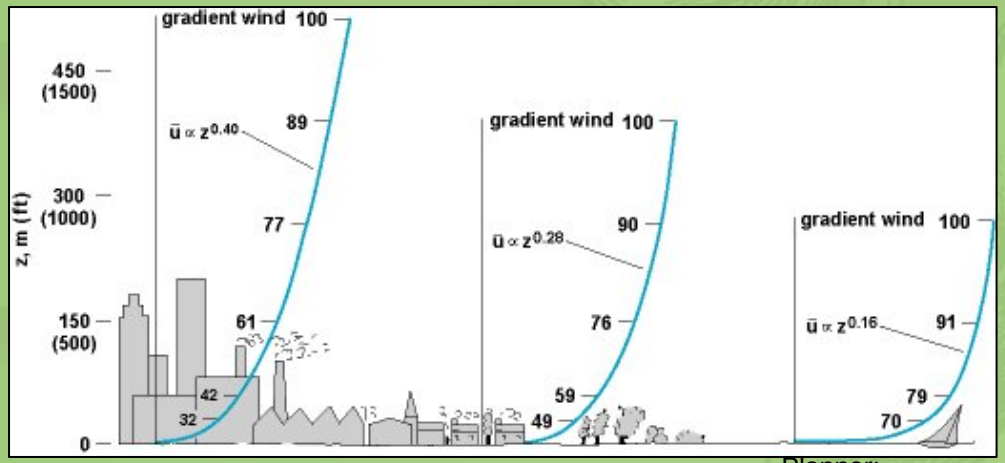


FIG. 5.4 Flow over a two-dimensional ridge showing formation of a separation bubble when the downwind slope is steep enough.



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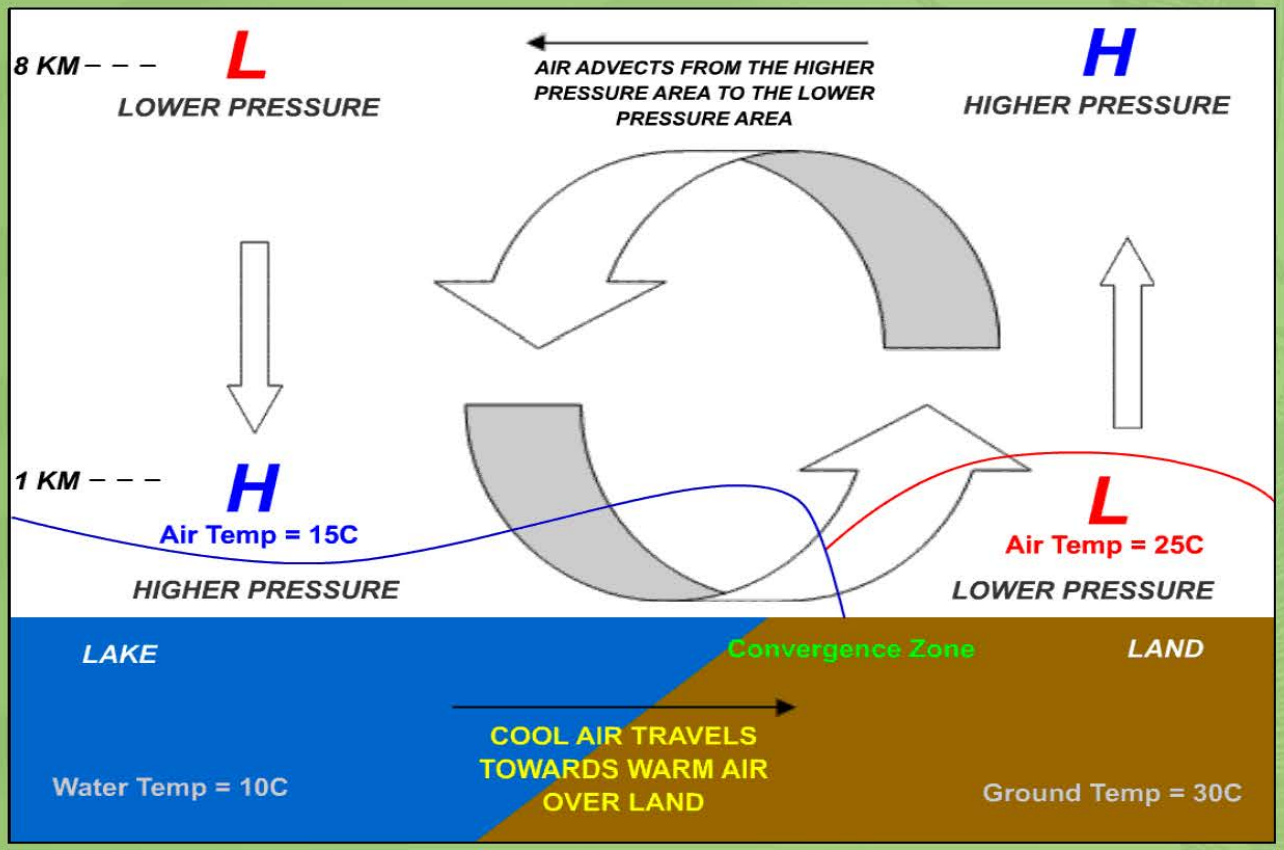
Sea and Lake Breezes



- Sea breezes always blow inland
- Often associated with thunderstorms
- Extent can vary from 1 mile to several miles inland

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Wind Monitoring

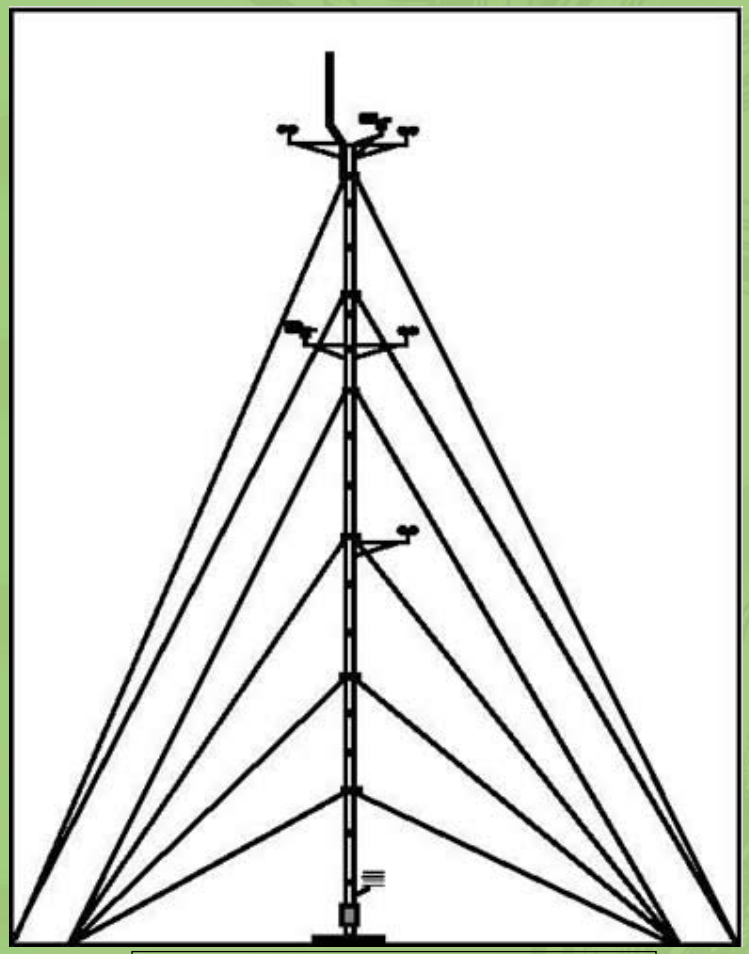
Meteorological Tower

Top – 2 Anemometers + Vane

Mid – 2 Anemometers + Vane

Lower – 2 Anemometer

Ground – Temperature,
Pressure and Logger



Met Tower Schematic

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Met Monitoring Equipment

Cup Anemometer

Data Logger

Direction Vane

Temperature Sensor

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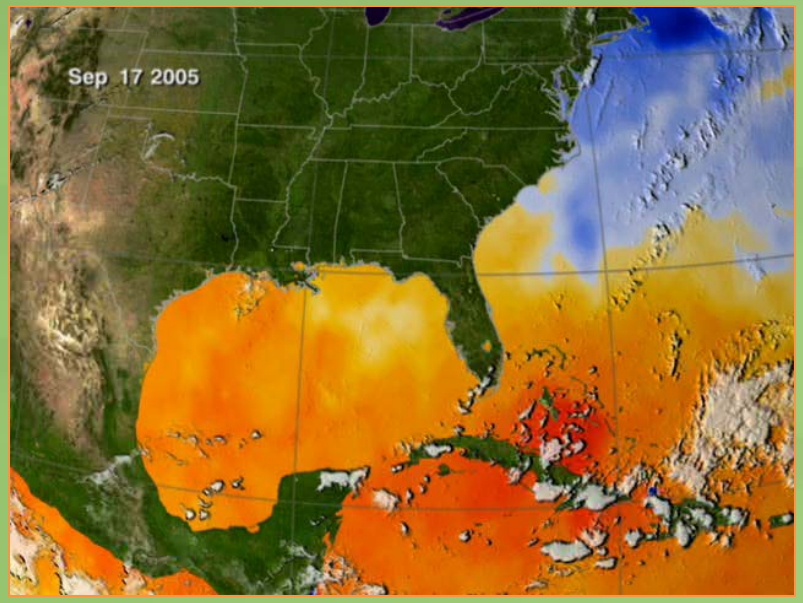
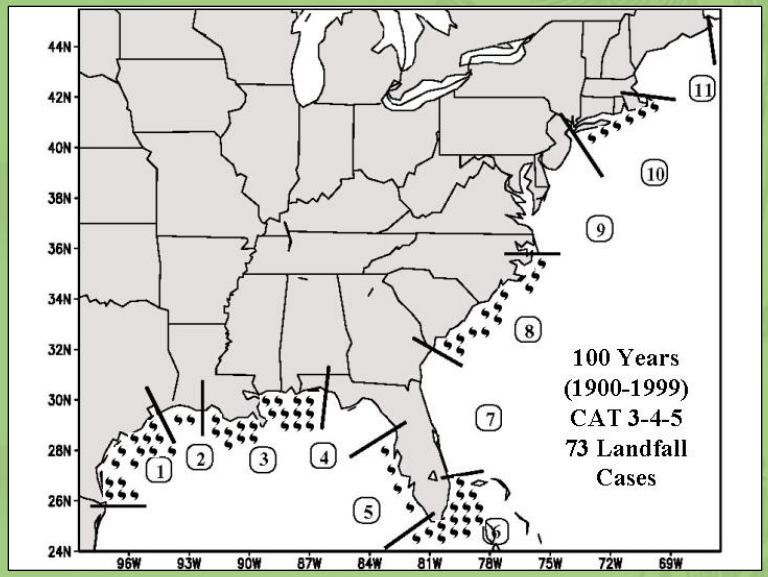
Hurricanes and Extreme Wind Events

- Turbines are located within Hurricane Zones
- Turbines rated to withstand high wind
- Insurable risk





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Local Investments into the Community

- Materials
  - Rental of equipment
  - Concrete
  - Steel
- Lodging
- Food
- Employment Opportunities
- On going maintenance and repair
- Vocational Training

Environmental Program

- Environmental Program Spans All Phases
  - Prospecting, Development, Construction, Operations
  - Corporate Avian Bat Protection Plan
- Site Specific Study and Management Plans
  - Desktop, Field Work, and Risk Modeling
- Utilize Consultants and Resources Specialists
- Collaborative Relationships
  - Regulators
  - Landowners
  - Stakeholders
- Creative Solutions

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Environmental Evaluation and Permitting Process

- Design and Implement Site-Specific Study Plan
- Meet with Environmental Regulators and Stakeholders
- Share Study Results and Update Study Plan
- Design Project to Avoid or Minimize Impacts
- Prepare Permit Applications or Mitigation Plans if needed
- Implement Environmental Plan During Construction
- Conduct Post-Construction Monitoring if needed

Environmental Evaluation at Big Lake

- High Level Landscape Screening and Critical Issues Assessment Completed
- Habitat Loss/Fragmentation Not a Concern
- Collisions Main Issue to Focus On
  - Federally Protected Species
    - Wood Storks
    - Snail Kites
    - Caracara
    - Bald Eagle
  - Other Species of Concern
    - Florida Bonneted Bat
    - State Listed Bats and Migratory Tree Bats
    - Wading Birds
    - Raptors

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Environmental Study Plan at Big Lake Avian Surveys

- Pre-Construction Bird Surveys

  12 Months Planned

  Started in November

  5 days/wk for 50 weeks

- Standard Point Counts

  40 over project area

  Additional at outlying points

Unlimited radius for 20 minutes: Species, abundance, flight height (measured and estimated), and direction

- Species/Guild Specific Protocols
  - Skywatch
  - Raptor and Wading Bird Behavior and Nest Surveys
  - Nocturnal

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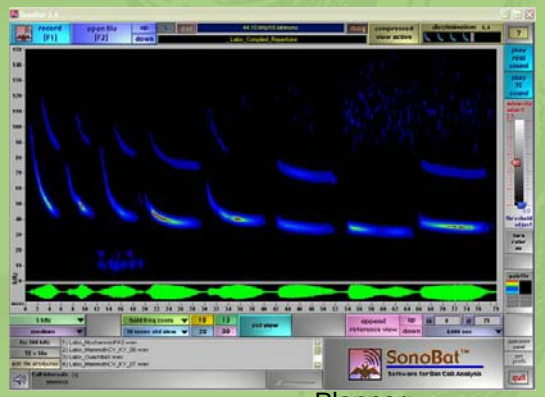
Environmental Study Plan at Big Lake
Bat Surveys

- Pre-Construction Bat Surveys
  - 12 Months Planned
  - Started in November
  - 4 monitoring stations on met towers
  - Utilizing full spectrum ReBAT Technology
  - Monitor bat activity at rotor swept height
  - Analyze data to species to address species specific mortality risk
  - Analyze bat data relative to atmospheric conditions
- Eumops grant from FWC



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Environmental Study Plan at Big Lake
Other Studies

- Sensitive Species Risk Assessment
- Wetlands and Waterways Analysis and Permitting
- Cultural Resource Review
- Creation of Avian Bat Protection Plan
- Coordination with Local, State, and Federal Agencies and Other Environmental Stakeholders
- Post-Construction Monitoring Plan

Wind Turbine Type

- New Technologies have reduced Wildlife Issues:
  - Tower Type : Lattice vs. Monopole
  - Turbine Height
  - Wind Farm Layout
  - Rotation Speed

How we build a wind farm

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Site Prep

- Material staging area
- Access Roads
- Widening Existing Roads
- Temporary Bridge Crossings

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Collection system

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Foundation excavation

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Foundation steel

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Foundation process/backfill

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Equipment Deliveries

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Turbine Installation

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Turbine Installation

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Setting The Nacelle

Flying Blades

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Restoration

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Substation

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