Building a Renewable Fuels Industry in New York State

Biomass 2009: Fueling Our Future

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Framing the Issue

- New York has an 85% reliance on foreign oil as a proportion of total petroleum used in NYS
- Transportation sector in New York accounts for 66% of petroleum and 1/3 of distillate fuel
- NY has active efforts to develop, demonstrate, and deploy AFV's
  - All technologies and fuels

Discussion Outline

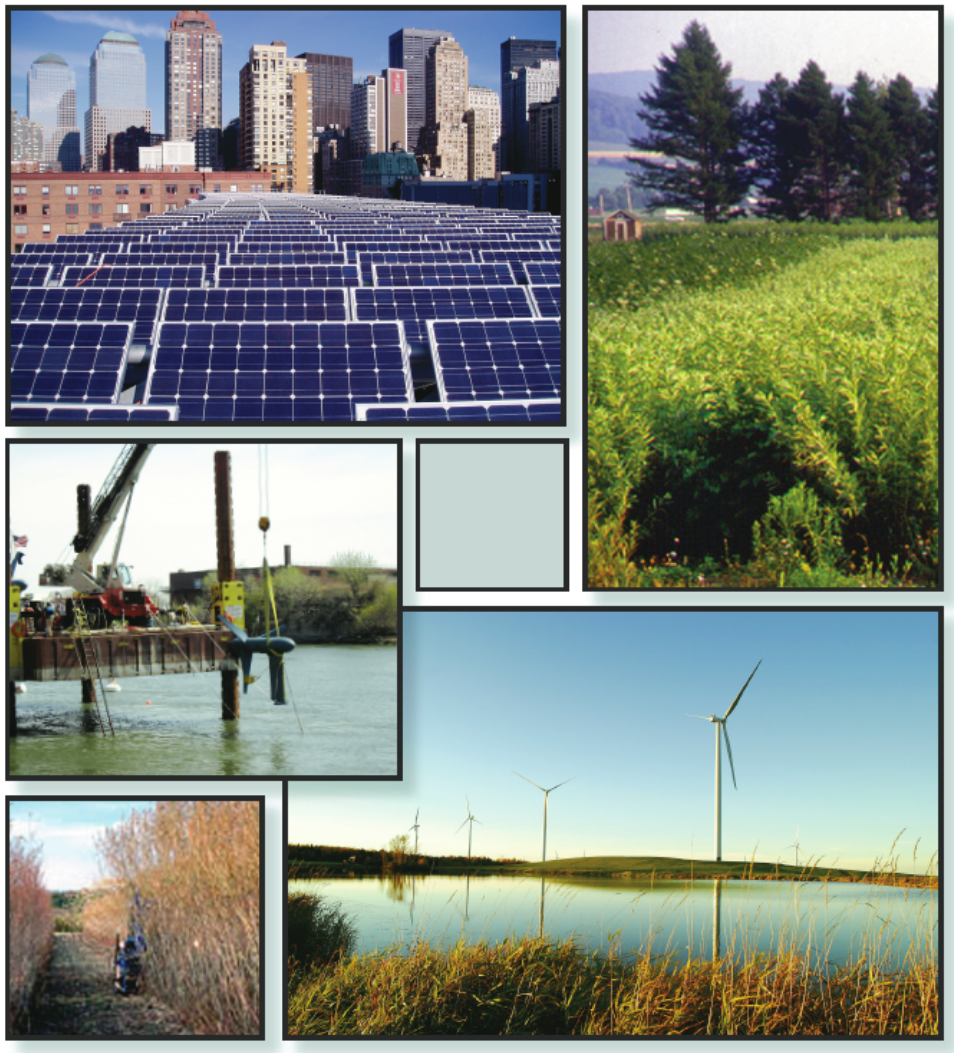
- Renewable Energy Task Force Recommendations
  - Creates the policy foundation
- Market Development
  - Builds wholesale and retail markets to meet policy goals
- Business Innovation
  - Grow sustainable businesses to serve the market
- Invest in the Future
  - Long term commitment through investment in research and planning

NYSERDA New York State Energy Research and Development Authority

Clean, Secure Energy and Economic Growth: A Commitment to Renewable Energy and Enhanced Energy Independence

THE FIRST REPORT OF THE RENEWABLE ENERGY TASK FORCE TO GOVERNOR DAVID A. PATERSON

FEBRUARY 2008



RENEWABLE ENERGY TASK FORCE SUMMARY RECOMMENDATIONS

- Re-Commit to Meeting the State's Renewable Portfolio Standard Goal and Evaluate Raising Renewable Energy Target
- Enhance and Expand New York's Existing Net Metering Law
- Invest in Clean Energy Businesses for Economic Growth
- Develop Both a Renewable Fuels Roadmap and a Sustainable Biomass Feedstock Study
- Expand Research and Development efforts for Renewable Energy
- Reclaim a Leadership Role Through Building and Product Energy Performance
- Expand Purchases of Renewable Energy by Local Governments
- Create a Vehicle Efficiency/Vehicle Miles Traveled Working Group
- Build a Sustainable Market for Solar Energy in New York State
- Develop a Strategy to Reap the Benefits of New York's Wind Energy Potential
- Expand Training Programs to Sustain a Green Collar Workforce
- Improve Overall Agency Consistency and Coordination
- Use Creative Financing to Promote Investment in the Renewable Energy Industry
- Encourage the Use of Advanced Metering and Smart-Grid Technology
- Build on Public and Private Educational Programs
- Facilitate Interconnection Processes for Renewable Distributed Generation

Renewable Fuels Roadmap and a Sustainable Biomass Feedstock Study

Supported by: NYSERDA, NYS Department of Environmental Conservation, NYS Department of Agriculture & Markets

Prime Contractor: Pace University

Budget: $750,000

Draft report by September 2009 with two annual updates.

- Life-cycle environmental consequences including upstream emissions and land-use impacts
- Best practices for supplying sustainable feedstock
- Current industrial and research base in NYS
- Distribution network
- Workforce and training needs
- Financial resources needed to develop industry
- Economic development benefits for agricultural areas

Market Development

Examples of Market Barriers Impacting Wide-scale Deployment of Renewables

Stakeholders	Opportunities	Barriers				
		Relatively High Costs	Performance Validation & Experience	Market Inertia & Risk Adversity	Lack of Knowledge	Infrastructure Limitations
Customers Manufacturers Regulators Policy Makers	Economic growth Market leadership Energy Security Spin-off Technologies	High capital cost Cost of financing Economies of Scale Technology learning	Performance uncertainty Lack of market maturity	Perception of risk Small number of actors Energy industry structure	Inadequate workforce Complex decision making Product attributes not understood Quantification of value	Distribution system Insufficient distribution channels Limited complementary technology (storage)

NYS Policies and Programs to Introduce Biofuels to the Public

- Focus on Distribution
  - NYSERDA issues grants to install storage and distribution equipment at terminal level
  - $1.8 million awarded for biodiesel and E85 projects at 14 locations
- Use State Asset
  - Thruway Authority to introduce biofuels at travel plazas

Going Public: Sharing the Risk

- NYSERDA Biofuel Station Initiative for E85 ethanol and biodiesel
  - $10 million for incentives to 300 retail gas stations
    - 50% up to $50,000 for equipment/installations
    - new dispensers and retrofits eligible
  - 70 applications to date with 20 gas stations now offering E85 and/or B20
  - Technical guidance offered

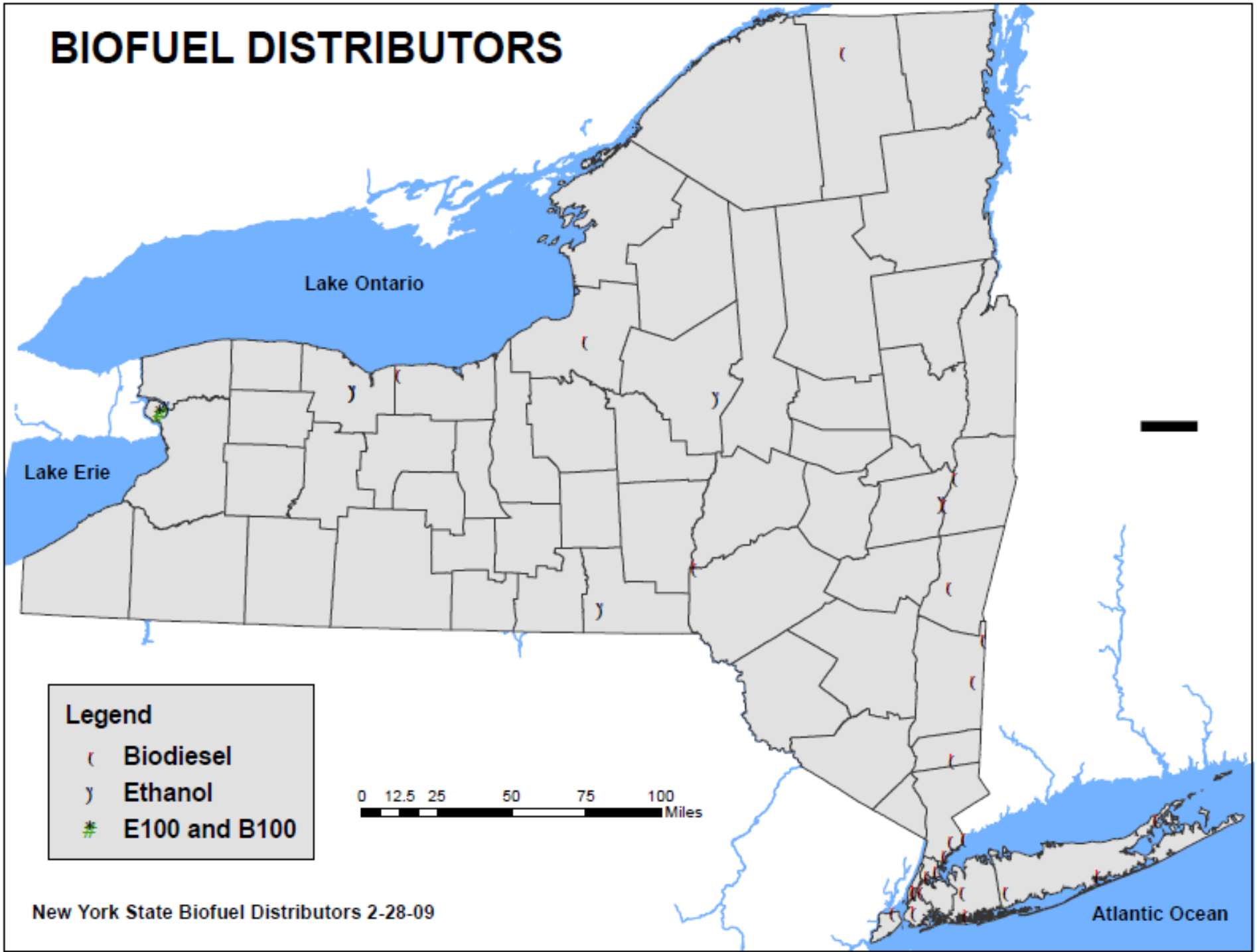
Dealing with Industry Barriers

- Legislation prohibiting exclusivity
- UL certification of fueling equipment
- Working with industry on cost and supply
- Notifying the public
  - DMV notification of drivers of FFV's
  - Partnership with major suppliers and OEMs

Tax Policy

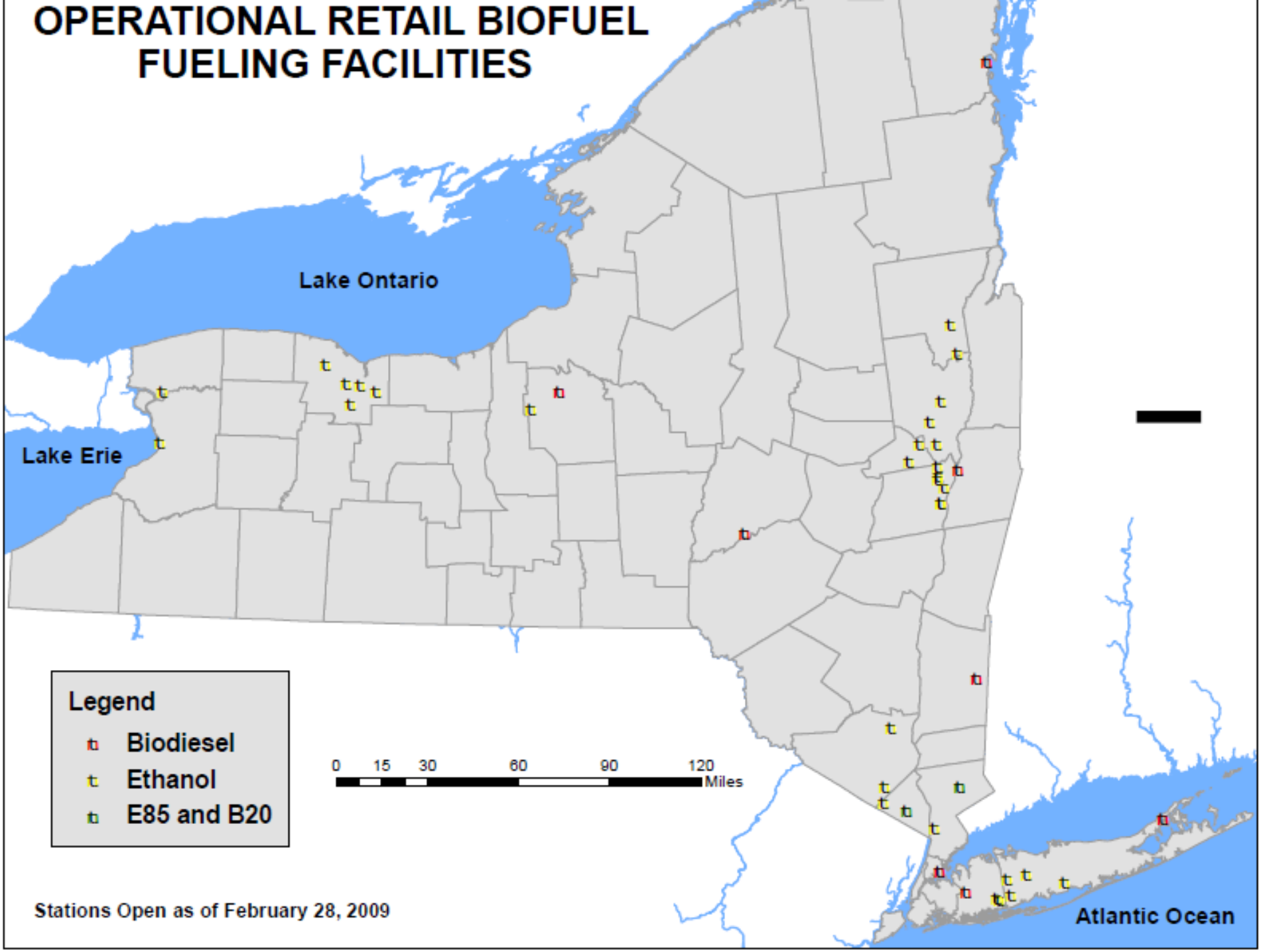
- No state tax on E85 or B20
  - Worth $.42/g for E85 and $.08/ g for biodiesel
  - Through 2010
- Credit up to 50% for E85 refueling property (no cap)
  - Through 2010
  - Federal credit is 30% (capped at $30,000)
- Bioheat: $.01 per % of biodiesel up to $.20 per gallon
- Need credits for terminal improvements

BIOFUEL DISTRIBUTORS



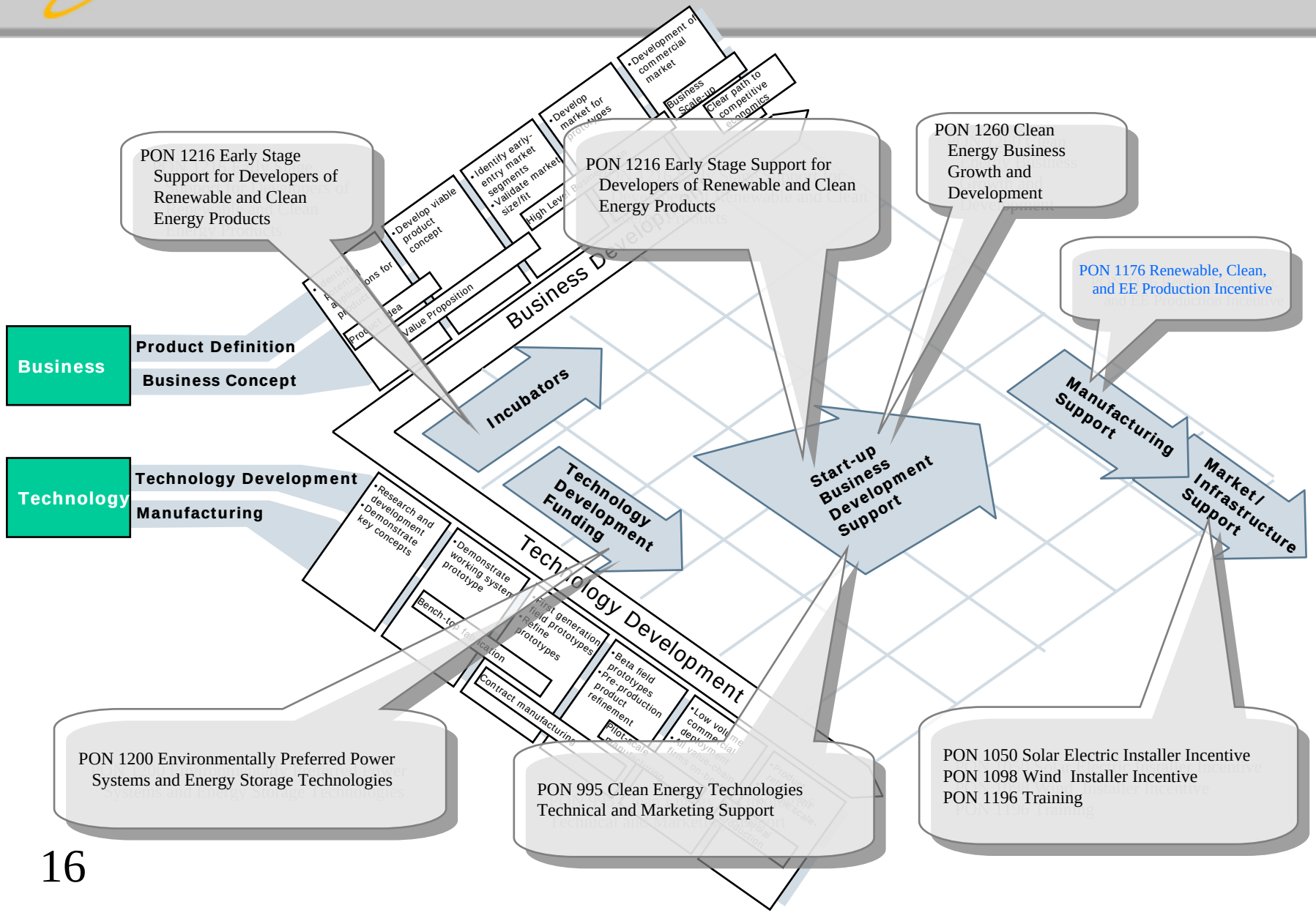
New York State Biofuel Distributors 2-28-09

OPERATIONAL RETAIL BIOFUEL FUELING FACILITIES



Stations Open as of February 28, 2009

Business Innovation


PON 1216 Early Stage Support for Developers of Renewable and Clean Energy Products
PON 1216 Early Stage Support for Developers of Renewable and Clean Energy Products
PON 1260 Clean Energy Business Growth and Development
PON 1176 Renewable, Clean, and EE Production Incentive
Business
Product Definition
Business Concept
Technology
Technology Development
Manufacturing
Business Development
Technology Development
Incubators
Technology Development Funding
Start-up Business Development Support
Manufacturing Support
Market / Infrastructure Support
PON 1200 Environmentally Preferred Power Systems and Energy Storage Technologies
PON 995 Clean Energy Technologies Technical and Marketing Support
PON 1050 Solar Electric Installer Incentive
PON 1098 Wind Installer Incentive
PON 1196 Training

Cellulosic Ethanol Pilot Plant Program

- Competitive Solicitation (issued in 2006) in partnership with NYS Department of Agriculture & Markets
- Share the risk of building and operating a pilot plant facility in New York State for three years
- Development of cellulosic ethanol feedstocks grown in New York
- Commercialization of technology developed at New York colleges, universities, and/or businesses based in New York State

MASCOMA

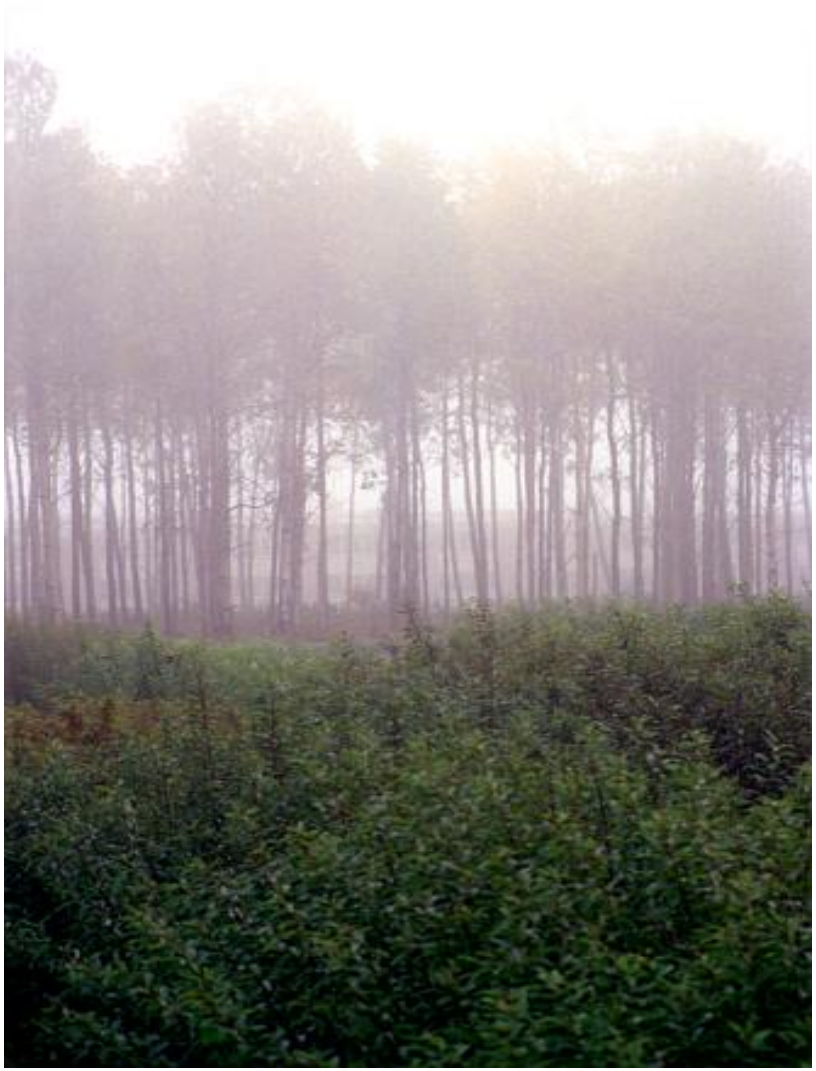
- Located at the Griffiss Technology Park in Rome, NY
- Pilot Plant: 500,000 gallons/year of ethanol
- NYSERDA Funds: $14.8 million Total Cost: $29.8 million
- Pilot plant used to test proprietary thermophilic microbes (e.g. *T. saccharolyticum*) and engineered Consolidated Bioprocessing (CBP) microorganism (reduce enzyme requirement)
- Partners: Cornell, Clarkson, Dartmouth
- Feedstocks: willows, papermill sludge, switch grass
- Lignin, other co-products
- Bench unit completed June 2008; Pilot completed January 2009
- Operate for 3 years – rotate feedstocks

CATALYST RENEWABLES

Environmentally Responsible Power Production

- Co-located with the Lyonsdale 19MW power plant.
- Pilot Plant:130,000 gallons/year of ethanol
- NYSERDA Funds: $10.3 million Total Cost: $20.7 million
- Biomass extraction (hemicellulose), membrane separation and fermentation developed and tested at SUNY-ESF
- Partners: SUNY-ESF, New Energy Capital, O'Brien & Gere
- Feedstocks: willows, harvested wood
- Lab work under way. Pilot to follow

Invest in the Future



Development of New Biofuels, Bioproducts, and Feedstocks in New York State

PON 1195 – NYSERDA Funding $1.6 million

Modeling the Energy and Environmental Impacts of Biofuel Production from Various NY Feedstocks [Energy and Environmental Research Associates, LLC]	Improving Economics of Biodiesel by Conversion of Glycerol Byproduct into Bioalcohols [SUNY Stony Brook]
Production of Sorghum Bioenergy Cubes [Mesa Reduction Engineering & Processing, Inc]	Albany Biofuels Team -- Cellulosic Ethanol Production Facility [KNC Holdings, Inc]
Production of Algae Feedstock for Biofuels [Northern Biodiesel]	Environmentally Benign PHA Production from Hot Water Wood Extracts [SUNY ESF]
A Compact, Economical Sensor for Blended Biodiesel Fuels [METSS Corporation]	Butanol Production from Wood Extract Sugars [SUNY ESF]
50-Gallon Ethanol Precursor Processor Development [Sweetwater Ethanol, LLC]	Development of a Model for the Assessment of Incremental Commercial Biomass Availability on a Regional Basis [SUNY ESF]
Development of a Microreactor Product for High Efficiency Biodiesel Production [United Environment & Energy, LLC]	Biodegradable Plastics from Renewable Sources for Manufacturing Medical Products in Central NY [Blue Highway, LLC (a new subsidiary of Welch Allen, Inc.)]
Biocatalytic Microreactors for the Efficient Fermentation of D-xylose in the Production of Fuel Ethanol from Cellulosic Biomass [Clarkson University]	

New York State Commitment

- Sustainable use of our resource base
- Investment in technology development and commercialization
- Overcome market/infrastructure barriers.

NYSERDA

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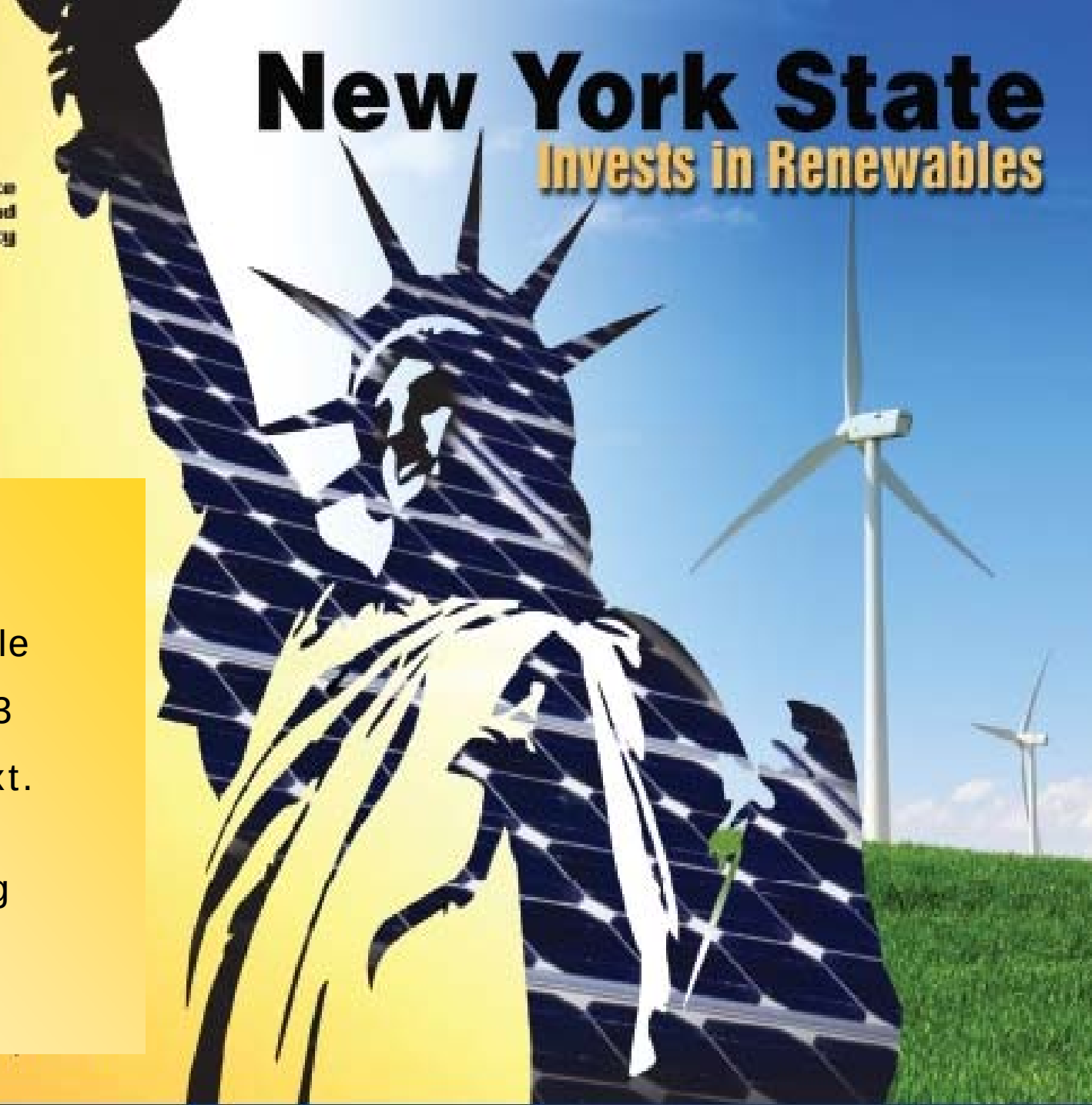
New York State
Invests in Renewables



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