



NYSERDA

New York State's Investment in Transportation Innovation

Adam Ruder
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About NYSERDA

- Established in 1975 by State Legislature
- ~350 employees, \$700 million/year budget
- Our mission is to advance innovative energy solutions in ways that improve New York's economy and environment
- Forge public/private partnerships with businesses, municipalities, residents, and other energy stakeholders to accomplish this goal

Technology and Business Innovation (TBI)

- \$750-\$800 million deployed over 10 years, currently in second year
- De-risking technologies, primarily focused on pre-Series B companies
- TBI investment teams
 - Advanced Buildings
 - Clean Transportation
 - Renewable Optimization and Energy Storage Innovation
 - Smart Grid Systems and Distributed Energy Integration
 - Technology to Market (T2M) – provides business development resources and supports the other four teams

NYSERDA's Clean Transportation Program

- **Goal:** Develop, demonstrate and deploy cutting edge technologies, policies, and business models that expand the use of:
 - Electric Vehicles
 - Public Transportation
 - Mobility Management
- Manages and invests ~\$125 million in R&D, demonstrations, and incentives

Some Companies We've Worked With

- Alstom – efficient rail car gearbox
- BAE Systems – hybrid transit bus
- Bandwagon – taxi pooling software system
- Clear-Vu Lighting – LED subway station lights
- Harris Corp. – pneumatic garbage truck
- HEVO – wireless EV charging
- IEM – rail wheel defect sensor
- KLD Engineering – adaptive traffic light system
- LC Drives – dense electric motor for marine, bus
- Nuvve – vehicle-to-grid power
- UES – electric delivery trucks
- Vnomics – driver coaching and fleet management system

Key Areas of Research

- **EVs:** improving economics of charging stations; EVs in carsharing, ridesharing, and ways to serve LMI communities; MD/HD electrification
- **Transit:** wayside energy storage; railcar and bus lightweighting; bus electrification; ways to improve bus route speeds
- **Mobility:** ITS and ICT technologies; connected infrastructure; TDM strategies; shared use mobility; AVs and energy use

Market Development/Deployment Focus

- **EVs:** Drive Clean Rebate; Charge Ready NY EVSE rebates; Truck Voucher Program
- **Transit:** Removing procurement and logistical barriers to deploying efficient technologies
- **Mobility:** Matchmaking between munis and tech providers; expanding understanding of economic impacts of smart mobility solutions for munis

Current/Upcoming R&D Solicitations

EV-Enabling Tech

- Focus on product development, demos, & policies that advance the EV market, especially charging economics, HD markets

PON 3833 NYSDOT Joint R&D Program

- Focus on demos, policies, and research studies that advance smart mobility

PON 3914 Public Transit

- Focus on product development & demonstration that make improvements to electrified rail, bus electrification, transit ridership

EV Research Program

- Seeks to remove barriers to EV adoption in New York State through:
 - Innovative strategies for EV utilization
 - Innovative outreach, education, or marketing
 - Proving the value proposition of EVs in the market
 - Research on specific barriers to adoption
 - Product and services development

Examples of EV Projects

- Deployment of 500+ EV charging stations around NYS
- Development of novel wireless charging system
- Development of kit for upfitting package delivery trucks to EVs
- Electric school bus education campaign
- Study of best practices for planning boards to incorporate EVs into proposed projects
- Demonstration of EV charging stations on light posts in off-street parking lots
- Feasibility study of residential EV car-sharing

Public Transportation Program

- Seeks to develop and demonstrate new transit supportive technologies
 - Energy efficiency improvements for electric rail and buses
 - Technologies and operational improvements that enable greater ridership
 - Novel public-private business models
 - Support to address logistical & operational barriers to technology adoption

Examples of Transit Projects

- Support for transit agencies' integration of electric buses into operations
- Demonstration of train wheel inspection technology
- Development of automated switch heater controls
- Development of LED worklights for subway tunnels, LED light fixtures for subway stations
- Development of first hybrid electric transit bus
- Development of efficient AC train gearbox
- Development of system for combining MTA bus and subway data for public use

Mobility Management Program

- Partnership with NYSDOT
- Seeks to develop, demonstrate, and deploy mobility management solutions:
 - Public-private collaborations for better product development
 - Demonstrations of underutilized technologies
 - Policy research studies
 - Removing barriers to broader adoption

What is included in Mobility Management?

- **Transportation Demand Management (TDM)**
 - Reducing system demand, especially during peak periods, by moving the travel to a different mode or time, or by eliminating the need for it altogether
 - Bike/ped support, transit incentives, carpooling, guaranteed ride home, telework, off-hour delivery
- **Shared Mobility**
 - Short-term, as-needed transportation services that are shared among users
 - Carsharing, ridesharing, ride-hailing, shuttles, scooters and bikes
- **Smart Mobility**
 - Intersection of connected/automated vehicles and smart cities, reliance on quality data
 - Intelligent Transportation Systems (ITS), Information and Communications Tech (ICT)
 - Vehicle (V) and Infrastructure (I): V2V, V2I, I2V, I2I

There is a need to address existing and ongoing system issues (leading to increased GHG emissions) and to mitigate potential negative impacts of future mobility options

Mobility Management Portfolio

- **Key Areas of Research**

- Transportation Demand Management strategies (people and goods)
- Shared use mobility (+EVs for these fleets; transit connections)
- Connected infrastructure, ITS and ICT technologies
- Automated vehicles and energy use
- Equity in access, low-to-moderate income communities

- **Market Development/Deployment Focus**

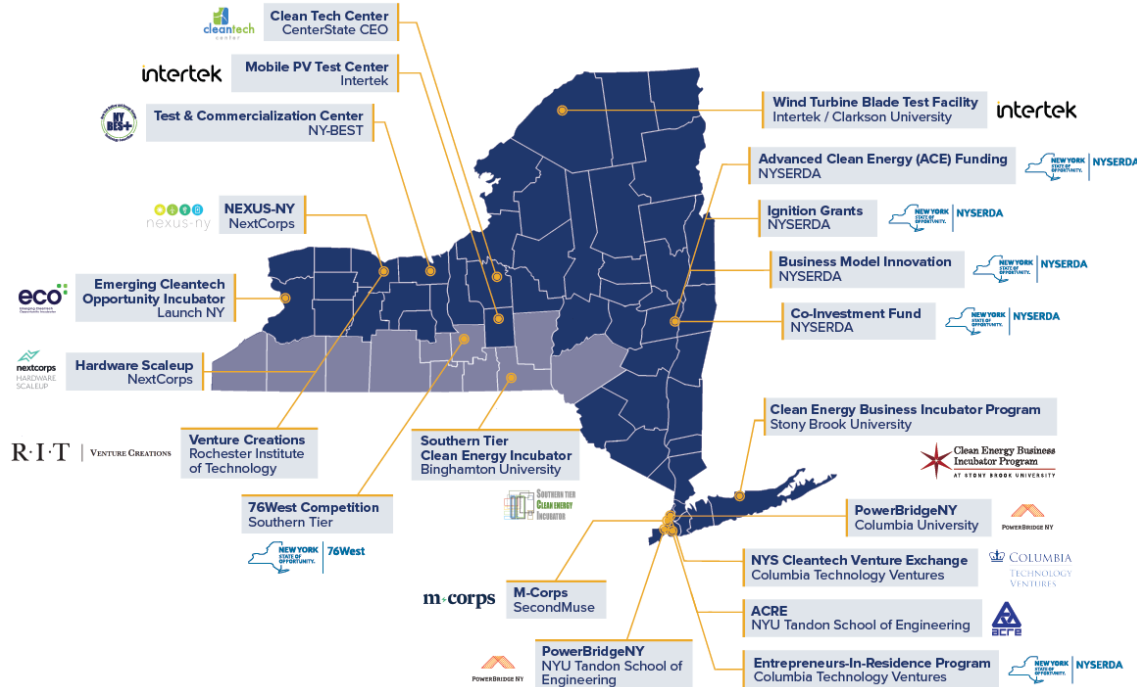
- Matchmaking between municipalities and technology providers
- Expanding understanding of impacts of mobility management solutions
- Demonstrations of underutilized solutions (with NYSDOT)

Mobility Management Projects

- Demonstrations of adaptive traffic signals
- Support for shared mobility in smaller markets
- ICT displays and SOV reduction competition between three cities in Westchester
- TDM, Complete Streets programs in Buffalo
- ICM & ITS demos in Buffalo around border crossings, work zones
- Development of parcel delivery auction system
- Demonstration of virtual transportation management system
- Demonstration of automated EV shuttle bus

NYSERDA's Tech-to-Market Program

- Develop, launch, and manage assets and resources for entrepreneurs and early-stage companies
- Provide business development and commercialization advisement to NYSERDA portfolio companies
- Mission: Make New York State the best place in the world to start and scale a clean energy business



Contacts

Transportation Program Manager: Adam Ruder, adam.ruder@nyserda.ny.gov

Electric Vehicles: Patrick Bolton, patrick.bolton@nyserda.ny.gov

Mobility Management: Robyn Marquis, robyn.marquis@nyserda.ny.gov

Public Transportation: Richard Mai, richard.mai@nyserda.ny.gov