Massachusetts GreenDOT: Sustainability and Stewardship
State Smart Transportation Initiative

Practical Solutions to Move America Forward.

A network of reform-oriented state DOTs, founded in 2010 and housed at the University of Wisconsin.

- Executive-level Community of Practice
- Technical assistance
- Resource for the transportation community

6/26/2014
Today’s Speakers

Ned Codd
Assistant Secretary for GreenDOT, Massachusetts Department of Transportation

Jeff Mullan
Former Secretary and CEO, Massachusetts Department of Transportation
GreenDOT Policy
Development & Implementation

- Background and Policy Context
- GreenDOT Policy Development
- GreenDOT Implementation Plan
- Status of GreenDOT Tasks and Initiatives
- Next Steps
- Questions and Discussion
GreenDOT Background and Policy Context

- 2006  Complete Streets Policy
- 2007  Leading by Example Executive Order
- 2008  Global Warming Solutions Act
- 2009  Transportation Reform Law
- 2010  GreenDOT Sustainability Policy
Complete Streets Design Approach

- Established by Project Development and Design Guide in 2006
- Design to accommodate all roadway users: pedestrians, bicyclists, public transit riders, and motor vehicles
- Design the roadway “from the outside in”
Leading by Example, 2007

- Executive Order 484 calls for the Commonwealth of MA to “lead by example” in clean energy & building efficiency
- Partnership among state agencies
  - Sets GHG and energy reduction targets for state agencies
  - Greener energy sources: renewable electricity generation, biofuel
  - Meet MA LEED-plus standards for new building, rehab projects
Global Warming Solutions Act, 2008

- In August, 2008 Governor Deval Patrick signed the Climate Protection & Green Economy Act
- Requires Massachusetts to reduce economy-wide GHG emissions:
  - 25% reduction below 1990 level by 2020
  - 80% reduction below 1990 level by 2050
- Transportation accounts for 35-40% of MA’s GHG emissions
Transportation Reform, 2009

- Chapter 25 of the Acts of 2009 created Massachusetts Department of Transportation
- Consolidation of disparate transportation agencies
- Focused on customer service, leading the nation in innovative transportation
- Creation of one unified, multi-modal transportation agency dedicated to moving people, while also promoting economic development, environmental sustainability, and quality of life
Healthy Transportation Compact, 2009

- Created by 2009 Transportation Reform Law
  - Co-Chair Secretary of Transportation
  - Co-Chair Secretary of Health and Human Services
  - Secretary of Energy and Environmental Affairs
  - Secretary of Housing and Economic Development
  - MassDOT Highway Administrator
  - MassDOT Transit Administrator
  - Commissioner of Public Health

- Improve public health through the coordination of land use, transportation and public health policy

- Supporting programs and policies
  - Mass in Motion
  - Wellness Grants
  - Leading by Example
  - Safe Routes to School
  - CMAQ, TE, TAP
GreenDOT Policy, 2010

Vision

The Massachusetts Department of Transportation will be a national leader in promoting sustainability in the transportation sector. Through the full range of our activities, from strategic planning to construction and system operations, MassDOT will promote sustainable economic development, protect the natural environment, and enhance the quality of life for all of the Commonwealth’s residents and visitors. This will enable MassDOT to use resources in a manner that serves its existing customers while preserving our resources for future generations.

Goals

- Reduce greenhouse gas (GHG) emissions
- Promote the healthy transportation modes of walking, bicycling, and transit
- Support smart growth development
GreenDOT Implementation Plan, 2012

Goals:

- **Air**
  - Reduce greenhouse gas emissions
  - Improve statewide air quality

- **Energy**
  - Consume less energy
  - Increase reliance on renewable energy

- **Land**
  - Minimize energy + chemicals used in maintenance
  - Enhance ecological performance of MassDOT impacted land

- **Materials**
  - Improve life-cycle impacts of investments
  - Purchase environmentally preferred products
  - Build green facilities for MassDOT

- **Policy Planning + Design**
  - Design a multi-modal transportation system
  - Promote healthy transportation + livable communities

- **Waste**
  - Triple mode share of bicycling, transit + walking
  - Achieve zero solid waste disposal
  - Reduce all exposure to hazardous waste

- **Water**
  - Use less water
  - Improve ecological function of water systems

- Established specific actions, programs, initiatives, targets
- Detailed action plan for MassDOT’s sustainability tasks
GreenDOT Implementation Plan, 2012

- Specific actions, programs, initiatives, targets
- Detailed action plan for MassDOT’s sustainability tasks
Mode Shift Goal, 2012

Triple amount of travel by walking, bicycling, and public transit by 2030

Mode shift by the numbers:
(in passenger miles traveled)

<table>
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<tr>
<th></th>
<th>Bike</th>
<th>Transit</th>
<th>Walking</th>
<th>Total</th>
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<tbody>
<tr>
<td>2010</td>
<td>150.4m</td>
<td>1.83b</td>
<td>101.1m</td>
<td>2.08b</td>
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<tr>
<td>2020</td>
<td>330.0m</td>
<td>3.99b</td>
<td>223.9m</td>
<td>4.55b</td>
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<tr>
<td>2030</td>
<td>516.0m</td>
<td>5.93b</td>
<td>333.6m</td>
<td>6.78b</td>
</tr>
</tbody>
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Major challenge, requiring progress on design, system capacity, education
Automobile vehicle miles traveled (VMT) have been largely flat since about 2004, in MA and nationally. Keeping VMT flat or declining is essential to achieving GWSA and GreenDOT goals.
Comprehensive State Transportation Plan

- Requirement of Transportation Reform Law (2009) and Transportation Revenue Law (2013)
- Requires performance-based planning and project prioritization
- weMove Massachusetts (WMM) – Statewide strategic plan that utilizes multi-modal, scenario-based planning to look at long-range system outcomes
- The Capital Investment Plan (CIP) – 5-year spending plan that details MassDOT’s funding sources and uses for state FY2014-2018
  - Sources: Federal funding (STIP), state bond funds, toll revenue
  - Uses: Prioritized multi-modal transportation investments
CIP Transit Investment Program

- Green Line Extension
- South Coast Rail
- South Station Expansion
- Silver Line Gateway
- Replacement cars – Red, Orange, Green
Greenhouse Gas Reductions – MBTA System

- Transit ridership contributes significantly to air quality benefits, GHG reductions
- An average ride on the T saves 12 lbs of CO$_2$e relative to driving alone for a comparable trip
Program of Shared-Use Path Projects: Historical, Currently Funded

Historical, Currently Funded Projects

- $5,000,000
- $10,000,000
- $15,000,000
- $20,000,000
- $25,000,000
- $30,000,000
- $35,000,000
- $40,000,000

Year: 2004 to 2017

Graph showing the funding amounts for each year from 2004 to 2017.

MassDOT
Massachusetts Department of Transportation

6/26/2014
Bay State Greenway – 7 regional bicycle corridors

On- and off-road segments

- ~453 miles off-road paths (~185 existing)
- ~352 miles on-road (~70 existing)
Travel Choice – Education & Encouragement

- MassRIDES program works with 325 employers across MA
- NuRide online trip planning and ride-matching system
- MassRIDES and partner TMAs – total of over 650 employers, with over 750,000 employees
- Safe Routes to School program
  - 625 partner schools (42% of MA schools, vs. 19% for national program)
  - 279,000 students
  - 171 communities
  - 20 infrastructure projects complete, ~20 more planned
Efficient Roadway Operations

- All Electronic Tolling (AET) project
  - Eliminate all tollbooths
  - Full-speed gantries read transponders or license plates
  - Test underway on Tobin Bridge
  - Significant reduction in congestion, GHG emissions from traffic stopped at tollbooths

- GO Time Real Time traffic information
  - Bluetooth-enabled real-time traffic information
  - Provides drivers with travel time information to key locations, as well as non-auto options (e.g. commuter rail alternative)
8-State Zero-Emission Vehicle (ZEV) MOU

- MassDOT, EEA working on 8-state initiative to put 3,300,000 electric, fuel cell electric and plug-in vehicles on the road by 2025
- MA target = 300,000 in Massachusetts

MBTA: 28 Level II EV charging stations at park-and-rides, 10 stations for T motor pool

Highway Division, EEA to install 15 EV charging stations spread around MA

MassEVIP – Incentives for municipalities – $1m+ for 115 EVs, 30 dual-head Level II charging stations

MOREV – Incentives for consumers to buy ZEVs and PZEVs, funded by Regional Greenhouse Gas Initiative (RGGI)
Energy Efficiency Retrofits

- MBTA lighting and mechanical energy retrofits have saved 19.7 kWh, 7.8 million pounds of CO2e, and $4.1 m since 2010
- MBTA 3rd rail efficiency project will significantly reduce 3rd rail power consumption for heating
- Aeronautics carbon-neutral airport project on Nantucket
- Highway Division working with DCAMM, DOER on Accelerated Energy Program to audit facilities and identify retrofit opportunities
- Highway Division lighting efficiency projects, including ongoing pilot project testing different LED solutions in CA/T tunnels
Renewable Energy Installations

- MBTA Orient Heights Station opened in Dec 2013 – 100kw of solar PVs on station canopies, permeable surfaces, VOC-free Paint, water reclamation, green roof, energy efficient HVAC & lighting
- MBTA pursuing two solar PV installations – 2.3mW at Readville Yard, 230 kW at Wonderland Parking Garage
- Aeronautics – 5 mW project at Barnstable Airport
- Highway Division 700 kW solar PVs on I-91 in Hatfield
- MBTA completing final design of 600 kW wind turbine in Bridgewater along commuter rail right of way, in addition to 1000 kW turbine in Kingston
The Healthy Transportation Policy Directive requires that ALL MassDOT projects (road & transit) serve ALL travel modes

All MassDOT funded or designed projects should PROMOTE “healthy modes” as defined by GreenDOT policy: walking, bicycling, public transit

Projects not meeting standards require Secretary’s approval
Health Impact Assessment

HIAs are a provision of the 2009 Transportation Reform Law

Held 2-day training session on HIAs in Sep 2011 for MassDOT, Health & Human Services, consultant staff

Worked with Health & Human Services, Department of Public Health to pilot HIA in “Grounding McGrath” study

Potential for removing outmoded highway viaduct in Somerville MA

All alternatives improve health factors (air quality, safety, noise, activity) and supported transportation study findings

Working to incorporate health factors into planning process
Sustainable Construction Practices

- Warm asphalt mix (WMA) chosen as the standard state specification as hot mix asphalt phased out
- WMA reduces fuel consumption, CO2 emissions, and traffic delays
- In 2013, 68% of 891,000 tons of asphalt placed was WMA
Climate Change Adaptation

- Highway Division working on climate adaptation plan in downtown Boston
- MBTA pursuing federal climate change adaptation funding
- MassDOT to undertake statewide adaptation plan

MassDOT-FHWA Pilot Project: Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options of the Central Artery

Each point in this grid contains water elevation data obtained from computer simulations of current and future flood events to predict future sea level rise and storm intensities.
Key Issues and Next Steps

- Coordination with MassDOT divisions on GreenDOT tasks, reporting
- GreenDOT Performance Management
  - Tracking of Implementation Plan tasks
  - Development of key outcome-based performance measures
    - Greenhouse gas impacts
    - Progress on Mode Shift Goal
    - Safety, health, quality of life
  - Evaluation and reporting
- External communication and coordination
  - GreenDOT Advisory Group
  - Coordination on overall GWSA implementation
  - Outreach to other organizations, general public
Thank You!

Discussion

Ned Codd
Assistant Secretary for GreenDOT
Massachusetts Department of Transportation
ned.codd@state.ma.us
857-368-9021
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QUESTIONS???

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