ORGANICS BAN IMPLEMENTATION IN MASSACHUSETTS — EVOLVING INFRASTRUCTURE

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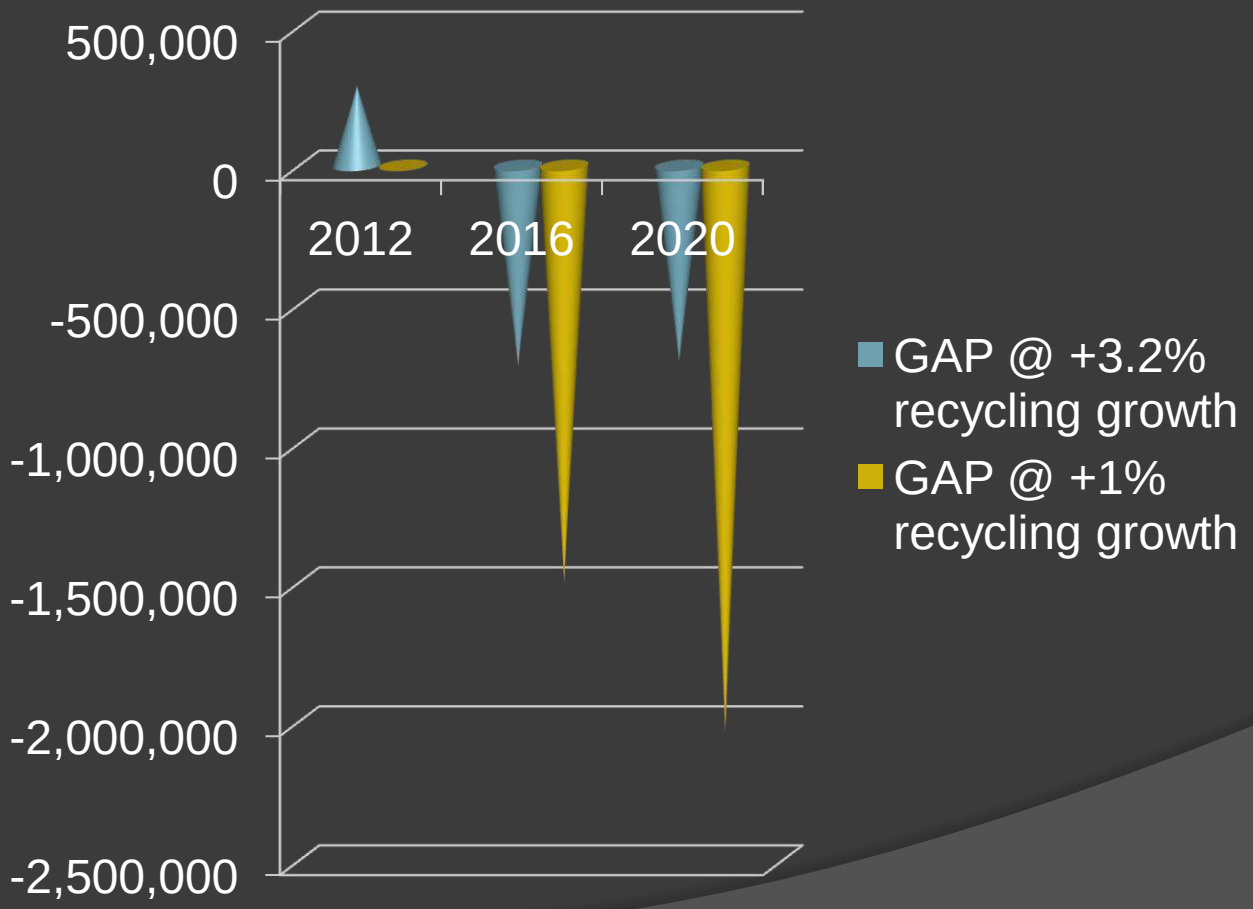
MA Organics Regulatory Landscape

- Landfill capacity in MA drops from 1,300,000 TPY in 2014 to 600,000 TPY in 2020
- MA: DEP “streamlined” regulatory/permitting structure for AD & composting in the fall of 2012 to create a clear permitting pathway
- Carved organic waste out of solid waste so site assignment is no longer necessary; still includes public hearing process overseen by local BOH
- 3 tiers of permits depending on size
- Utilizing disposal ban on larger generators, haulers and solid waste facilities

The conundrum…16 landfills goes to 5! *Mind "the gap"*



THE BAN: Cornerstone of MA Solid Waste Policy since 1990

- MA began utilizing waste bans as a regulatory mechanism to keep restricted materials from landfill, combustion facilities and transfer stations in 1990 with lead batteries
- Since 1990, the DEP has applied bans to: leaves (‘91), tires (‘91), white goods (‘91), yard waste (’92), aluminum containers (‘92), metal or glass (‘92), single polymer plastics (‘94), recyclable paper (‘94), cathode ray tubes (‘00), asphalt (‘06), metal (‘06), wood (‘06), and clean gypsum wallboard (‘11)
- That’s 14 *existing* bans so MA DEP is just adding organics to an established structure
- Organics ban finalized January 2014

MA Organics Ban: The Basics

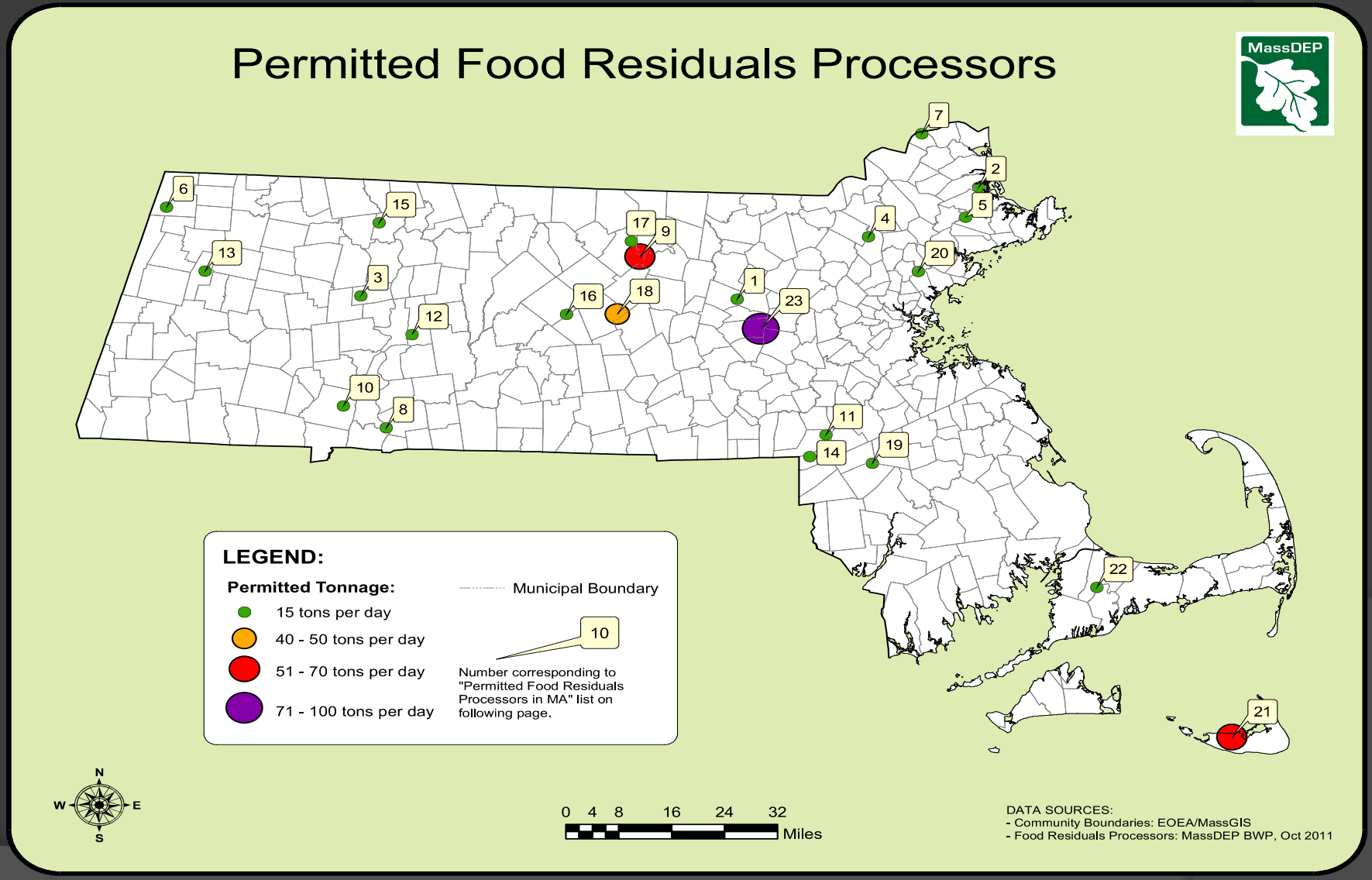
- Applying the concept that banning a recyclable material from solid waste disposal creates a market for that material
- Applies only to large industrial and commercial generators only (no residential or smaller business)
- Cut-off is 1 ton per week of generation
- Ban went into effect 1 October 2014 (originally 1 July 2014)
- DEP estimates that currently approximately 100,000 TPY is being separated and diverted
- Goal is 350,000 additional tons per year of organics diversion by 2020 & 50 MW of AD

Organics Processing in MA*

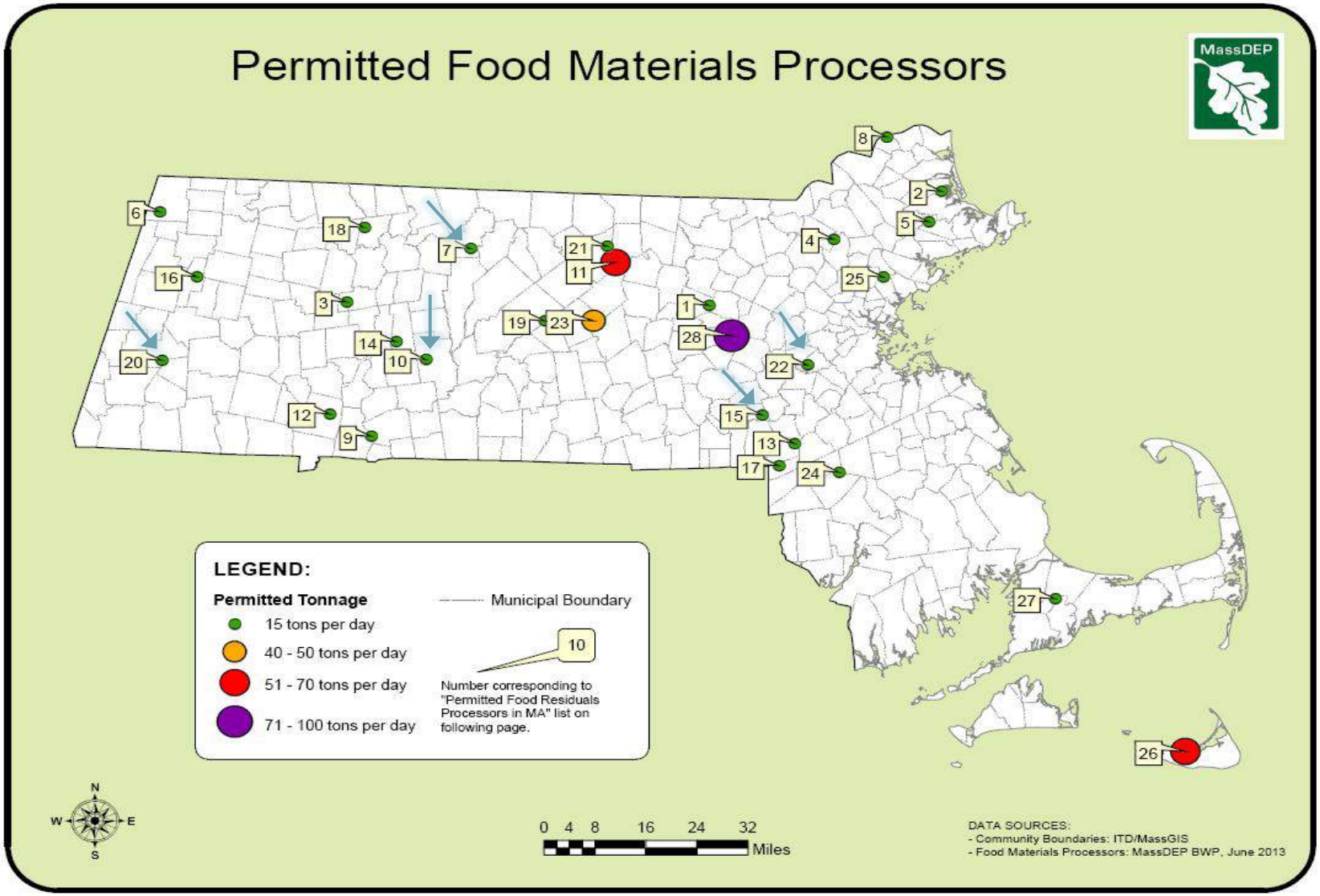
- 49 permitted facilities including commercial & farm composting, AD & animal feed
- 25 agricultural, 15 commercial, 1 municipal, 8 animal feed
- Of the 49, 3 anaerobic digesters
- Total PERMITTED processing capacity = 1,100 TPD or 285,000 TPY @ 5 days/week
- 5 new facilities from 2011-2013: 2 commercial, 2 ag & 1 muni; 75 TPD or +13% (doesn't include pig farms or on-site solutions
- 21 new sites from 2013-2014: 8 animal feed, 8 agricultural, 5 commercial

*as of September 2014

MA in 2011


Permitted Food Residuals Processors
MassDEP
LEGEND:
Permitted Tonnage:
15 tons per day
40 - 50 tons per day
51 - 70 tons per day
71 - 100 tons per day
Municipal Boundary
10
Number corresponding to "Permitted Food Residuals Processors in MA" list on following page.
N
W
E
S
0 4 8 16 24 32
Miles
DATA SOURCES:
- Community Boundaries: EOEA/MassGIS
- Food Residuals Processors: MassDEP BWP, Oct 2011

MA in 2013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MassDEP
LEGEND:
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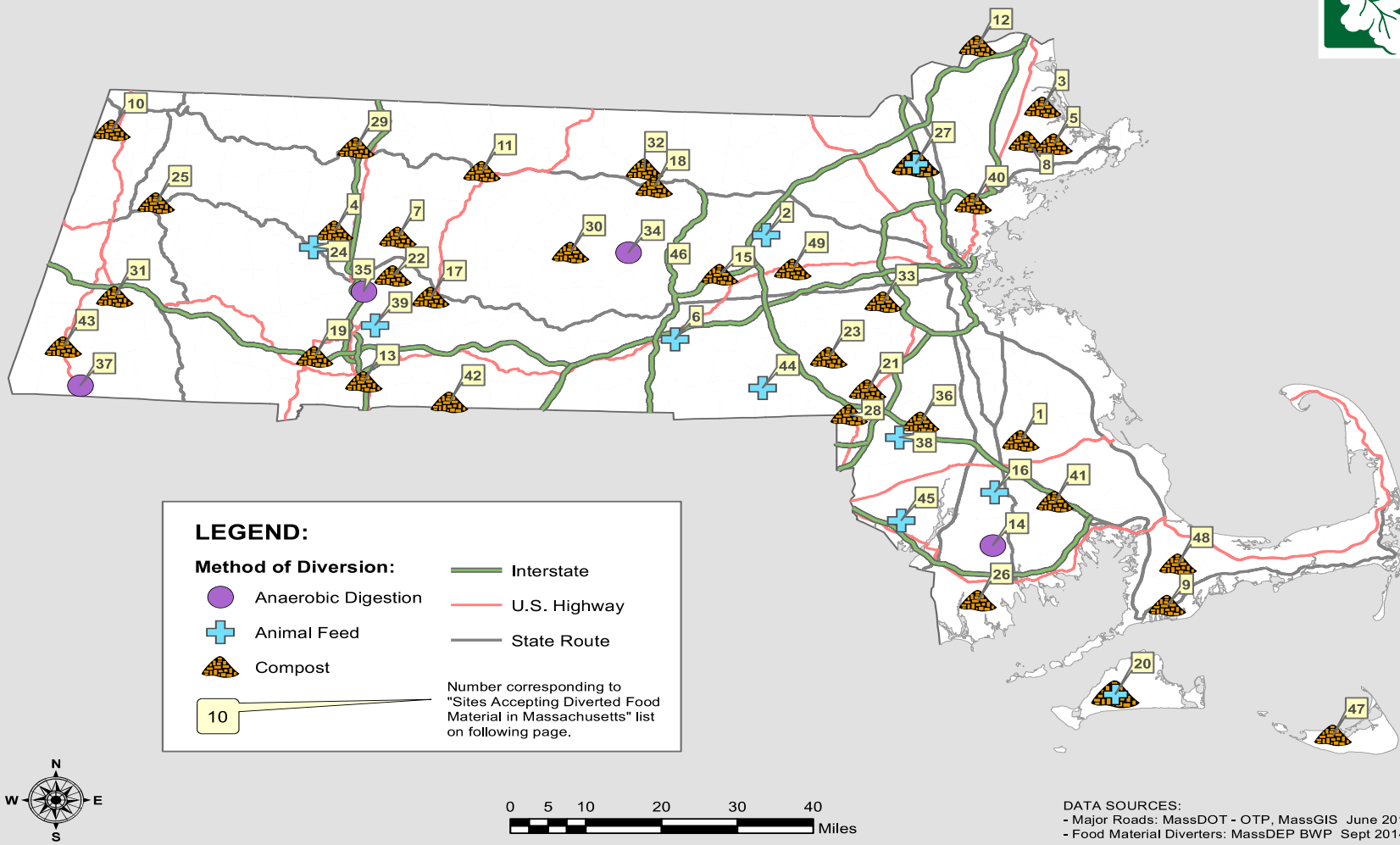
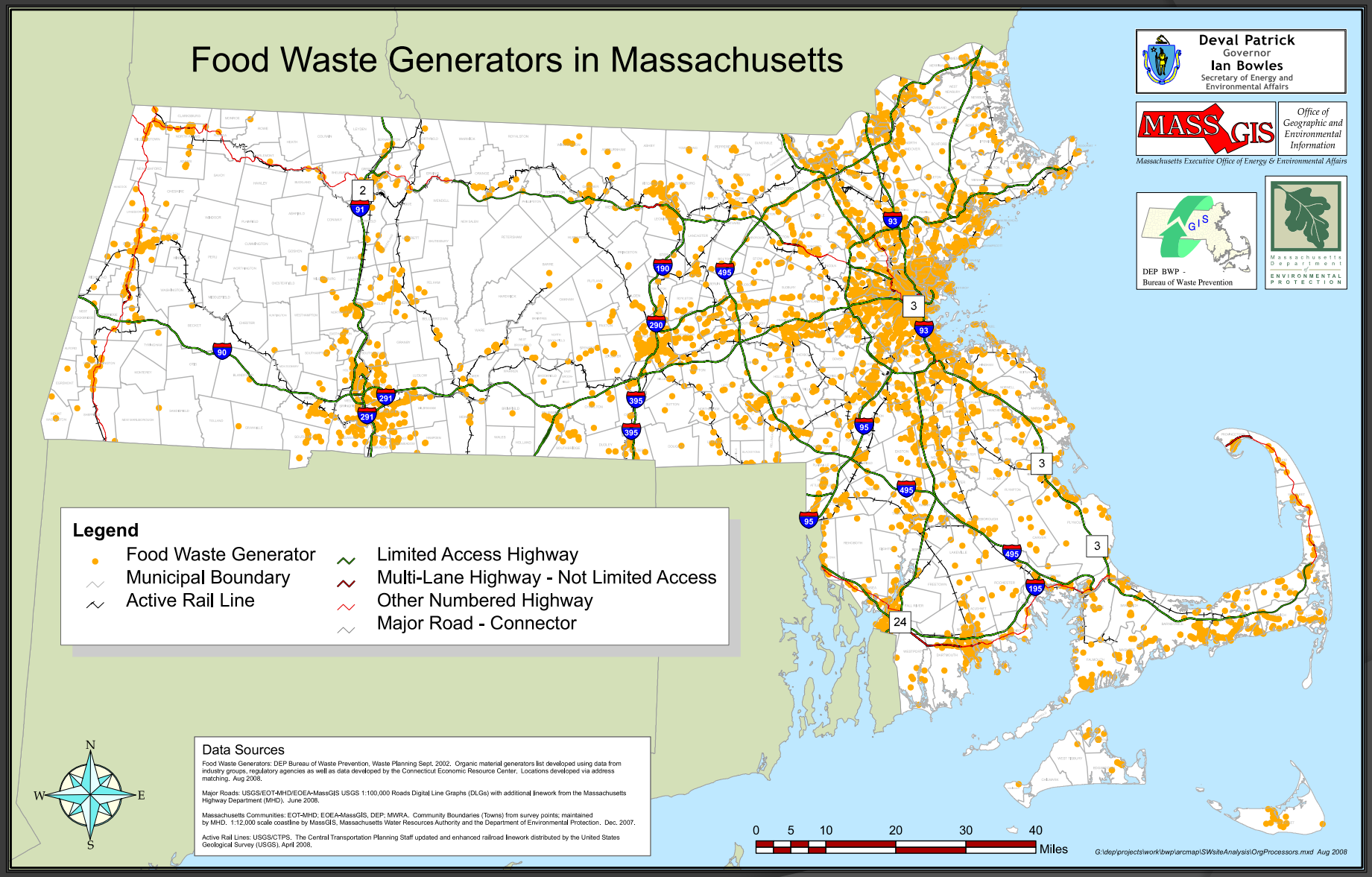
Municipal Boundary
10
Number corresponding to "Permitted Food Residuals Processors in MA" list on following page.
N
W
E
S
0 4 8 16 24 32
Miles
DATA SOURCES:
- Community Boundaries: ITD/MassGIS
- Food Materials Processors: MassDEP BWP, June 2013

MA in 2014


Sites Accepting Diverted Food Material
MassDEP
LEGEND:
Method of Diversion:
Anaerobic Digestion
Animal Feed
Compost
Interstate
U.S. Highway
State Route
10
Number corresponding to "Sites Accepting Diverted Food Material in Massachusetts" list on following page.
N
W
E
S
0 5 10 20 30 40
Miles
DATA SOURCES:
- Major Roads: MassDOT - OTP, MassGIS June 2014
- Food Material Diverters: MassDEP BWP Sept 2014


Food Waste Generators in Massachusetts
Deval Patrick
Governor
Ian Bowles
Secretary of Energy and Environmental Affairs
MASS GIS
Office of Geographic and Environmental Information
Massachusetts Executive Office of Energy & Environmental Affairs
DEP BWP - Bureau of Waste Prevention
Massachusetts Department of ENVIRONMENTAL PROTECTION
Legend
Food Waste Generator
Municipal Boundary
Active Rail Line
Limited Access Highway
Multi-Lane Highway - Not Limited Access
Other Numbered Highway
Major Road - Connector
Data Sources
Food Waste Generators: DEP Bureau of Waste Prevention, Waste Planning Sept. 2002. Organic material generators list developed using data from industry groups, regulatory agencies as well as data developed by the Connecticut Economic Resource Center. Locations developed via address matching. Aug 2008.
Major Roads: USGS/EOT-MHD/EOEA-MassGIS USGS 1:100,000 Roads Digital Line Graphs (DLGs) with additional linework from the Massachusetts Highway Department (MHD). June 2008.
Massachusetts Communities: EOT-MHD; EOEA-MassGIS, DEP; MWRA. Community Boundaries (Towns) from survey points; maintained by MHD. 1:12,000 scale coastline by MassGIS, Massachusetts Water Resources Authority and the Department of Environmental Protection. Dec. 2007.
Active Rail Lines: USGS/CTPS. The Central Transportation Planning Staff updated and enhanced railroad linework distributed by the United States Geological Survey (USGS), April 2008.
N
W
E
S
0 5 10 20 30 40
Miles
G:\dep\projects\work\bwp\arcmap\SWsiteAnalysis\OrgProcessors.mxd Aug 2008

Profile of **Permitted** Organics Processing Capacity: Sept. 2014

- 49 Permitted Processors
  - Ag: 50% sites, 55% of capacity
  - Commercial: 23% sites, 45% capacity
  - Animal feed: 16% sites, 0% capacity
- Large processors: compost & AD
  - Mass Natural, Westminster: 100 TPD
  - Casella Organics, Rutland: 100 TPD AD
  - Casella Organics, Hadley: 100 TPD AD
  - Pine Island Farm, Sheffield: 100 TPD – minimal food waste currently being processed

Profile, cont.

- Large processors: co-compost
  - WeCare, Marlborough: 100 TPD
  - Waste Options, Nantucket: 60 TPD
  - Fitchburg Landfill: 70 TPD
- 7 Large Processors = 55%+ total capacity
- ALL OTHER PROCESSORS: 15 TPD

The Other Player in MA…POTWs

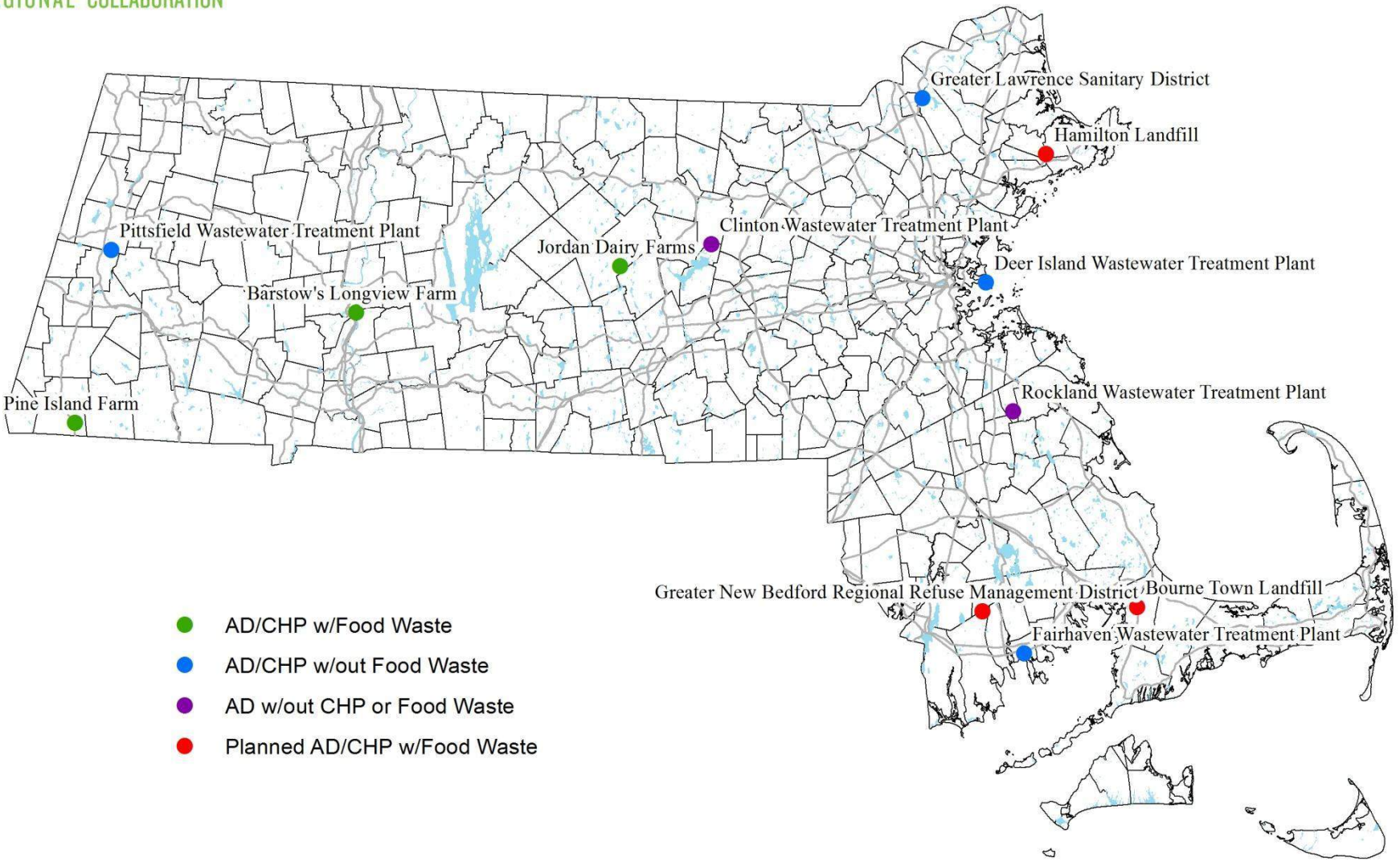
- Revised regulations explicitly allow POTWs to accept Source Separated Organics in AD units at the POTW (314 CMR 12.00)
- This change has created an opportunity to add processing capacity at plants that have already been built i.e. path of least resistance from an investment standpoint
- Out of 133 municipal WWTPs in MA **6** utilize AD; **3** generate electricity; **0** currently accept SSO
- The Big Daddy of the POTW world, Deer Island (currently 2nd largest in the USA), was scheduled to start a 3 year pilot project in July 2014. If gets to scale, 400-700 TPD.

WWTPs in MA w/ AD

Name	Flow	Biogas Use
Deer Island	360	Heat + elec.
GLSD	30	Heat + flare
Pittsfield	13	Heat + elec.
Fairhaven	2.7	Heat + elec.
Rockland	2.5	Heat + flare
Clinton	2-4	Heat + flare

MAPC
METROPOLITAN AREA PLANNING COUNCIL
50 YEARS
SMART GROWTH AND REGIONAL COLLABORATION

Existing Digesters – Massachusetts



The Big Question…Will The Ban Help Feedstock Availability?

- Many/most industrial generators have already found a home for their homogeneous, clean waste streams; new capacity needs to offer a more cost effective solution
- Composters are tightening up allowable levels of contamination
- A significant price differential currently in the market between “dirty” and “clean” SSO although currently narrowing as clean tip fee ↑
- Enforcement essentially falls on the haulers as they are the entity that receives failed load letters if their tip exceeds allowable levels and is responsible for ensuring customer compliance

AD's in MA Currently Accepting SSO

- Jordan Farms, Rutland
  - Dairy farm co-digesting w/ cow manure
  - Only accepts liquid food waste
  - Digestate is applies directly to silage for cows and is used for bedding
  - 100 TPD of food waste capacity (recent RCC permit granted)
- Barway Farm, Hadley
  - Similar to Jordan although much farther from population center and smaller
- **CommonWealth Resources Bio Energy, New Bedford**
  - Pilot wet digester @ Crapo Hill Landfill
  - 1st stage = 5,000 GPD; 2nd stage = 120 TPD
  - ¼ FOG, ¼ sludge, ½ food waste

On-SiteAnaerobic Digesters

- 4 in MA
  - Framingham: Ken’s Steakhouse
  - Franklin & Lynn: Garelick Farms (dairy owned by Dean Foods)
  - Peabody: Kraft Foods Atlantic Gelatin

AD Facilities Permitted and Under Construction in MA

- Freetown, MA: **FEED Energy**
  - Same concept as at Kroger distribution center in Compton, MA
  - Economics of backhaul
  - De-packaging and contaminant removal on-site
  - Wet digester

Torpedoed Projects

- Haverill, MA: developer w/drew application in 2011
  - Occurred before the new regulations were in place
  - Issues over BOH control; Mayor of Haverill vocal opponent
  - Hundreds of phone calls from residents
- Lexington, MA: draft RFP issued but not issued mid-2013
  - Closed landfill location 10 miles from Boston; compost facility for Lexington and Atlington
  - "I have no interest in running 40 or 50 trucks of trash into this community every day." *Selectman Burnell – Lexington*
  - Community concerns over real estate value
- Franklin, MA: tabled prior to RFP issuance in mid-2013
  - "How safe is the technology *really*?"
  - "Is our fire department prepared to handle a fire or explosion?"
  - "Adding the truck traffic to the intersection will make a bad situation even worse."
  - "What guarantees are there about air quality?"
  - "Do you expect us to trust the EPA and DEP on air quality standards?"
- Hamilton, MA: RFP issued but no responses
  - No utilities, no guaranteed feedstock, not enough space for curing

“Under Consideration….”

- Bourne, MA
  - RFP issued and awarded to Harvest Power 1½ years ago
  - Harvest and Bourne finalized lease negotiations recently
  - Plant not expected to go live before 2016
- RFPs resulting from feasibility studies at state owned facilities conducted in 2013
  - MCI Norfolk
  - MCI Sharon
  - Wastewater treatment plant located at UMass Amherst
- Barway Farm: 3rd dairy AD in the state

MA Dept. of Agricultural Resources

- Currently regulates approximately 50% of sites permitted to process food waste; 55% of overall capacity
- New nutrient management regulations out for public comment; looks to limit phosphorus but may have implications for AD – digestate management
- Potential new regs would require any farm that accepts SSO for composting to utilize ½ of the finished product on farm. If passed has the potential to impact 40-50% of on-farm composters.

A Few Conclusions

- 1st stage of AD development: on farm, wet co-digestion facilities
- 2nd wave: commercial on-site & small stand-alone AD projects using wet digestion
- 3rd wave: POTWs accept SSO
- 4th wave: merchant, stand-alone dry AD
- Statutory approach vs. regulatory approach seems more likely to lead to feedstock certainty for developer
- 351 “fiefdoms” – MA has a higher level of local (municipal) control over the siting process so priority needs to be early and often public communication

Key Considerations

- Value differentiation between clean and/or high energy feedstock streams
- With a large “pilot” potentially project being built in Boston, possibility of crowding out of other facilities goes up
- What will constitute success vs. failure of the ban?
- Biggest issue to date: TRUCK TRAFFIC
- Municipalities need to be partners in development which includes early and frequent communication and engagement with residents and local businesses
- To reach scale, AD needs guaranteed feedstock: statutory approach vs. regulatory helps this aspect

Questions?

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