

# A Technology-Specific Super ESPC for Biomass and Alternate Methane Fuels

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**National Energy Technology Laboratory**

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# NETL



## What We Are

One of DOE's 15 National Labs  
Government owned & operated

## What We Do

Shape, fund, & manage extramural  
RD&D programs

Conduct on-site science and  
technology research

Conduct analyses to support policy  
development



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# Our RD&D Activities

**Strategic Center for  
Natural Gas**

**Coal Power Systems**

**Climate Change  
Policy Support**

**Transportation  
Fuels**

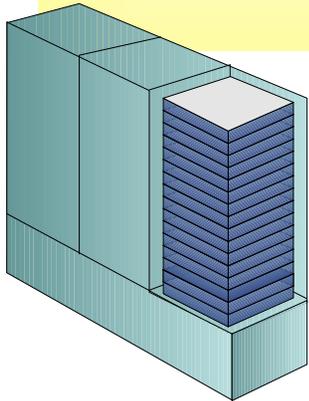
**Environmental  
Management / Defense  
Programs**



# Relevant NETL Programs

## Distributed Generation

PAFC - entering commercial market  
MCFC - near-term, high efficiency  
SOFC - near-term, high efficiency  
Hybrid turbine/fuel cell - ultimate efficiency  
Reciprocating Engine - lowest cost



## Gas Fuels

Natural gas-to-liquids  
Upgrading low-quality gas  
Membranes for syngas and H<sub>2</sub> production  
Vision 21 plants

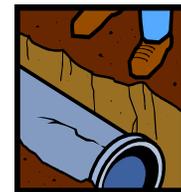
## Global Climate Change

Policy support  
International projects in 16 countries



# Tech-Specific Super ESPCs

- Emphasize “emerging” technologies
- Feature ESCOs with specialized expertise
- Three are currently available
  - photovoltaics
  - solar thermal concentrating systems,
  - geothermal heat pumps
- Coming soon...



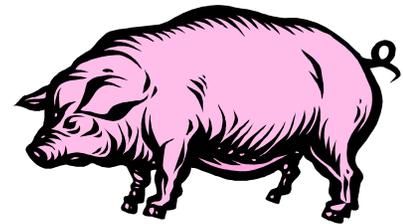
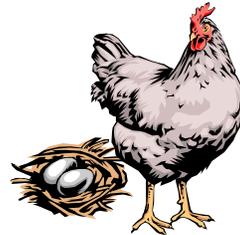
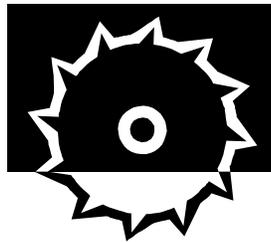
# The Fourth Tech-Specific ESPC

Biomass and  
Alternate  
Methane  
Fuels



# Biomass Fuels

- any organic matter that is available on a renewable or recurring basis
  - dedicated energy crops and trees
  - wood and wood residues
  - animal wastes
  - etc.



# Alternate Methane Fuels



- landfill methane
- wastewater treatment digester gas
- coalbed methane



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## Supports Two Executive Orders

- **EO-13123, “Greening the Government Through Efficient Energy Management”**
  - requires 35% cut in Federal energy by 2010 (from 1985 levels)
- **EO-13134, “Developing and Promoting Biobased Products and Bioenergy,”**
  - stimulates the early adoption of technologies that will make bioenergy cost-competitive



## Scope of BAMF Projects

- Federally-owned facilities in the U.S., its territories and internationally
- Must reduce energy costs
  - fuel switching may not reduce energy use
- BAMF project must be the “primary” component however
- “Conventional” ECMs may be included
  - HVAC, motors, lighting
- BAMF must be utilized on Federal property
  - otherwise, an ESPC is not the suitable vehicle



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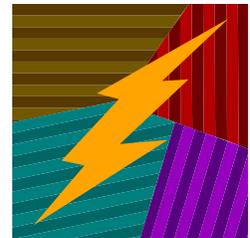
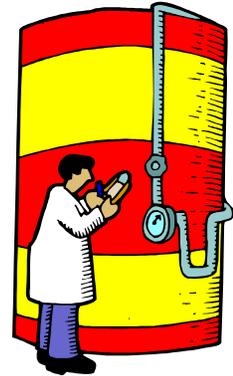
## Scope, continued

- Resource may be owned by the Federal facility, a local municipality or a private company
- If the resource is not Federally owned:
  - the delivery order will provide for the delivery of fuel to Federal property
  - if purchased by the gov't, its cost may be linked to an independent fuel price index, e.g., Inside FERC
  - the D.O. scope will be downstream of the delivery point, e.g., a flange or storage bin



# Types of BAMF Projects

- **Modify/install equipment to:**
  - supplant or supplement conventional fuel with a BAMF, e.g. dual boiler burners
  - accomplish something new, e.g. CHP or bio-fueled vehicles
- **Technologies**
  - fuel cleanup / upgrading
  - co-firing (fluidized bed boilers)
  - CHP (fuel cells, microturbines, recipis)
  - emissions control



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# Environmental Advantages

- **Reduced greenhouse gas emissions**
  - marketable credits?
- **“Green” power**
  - electricity generated from renewable energy sources such as solar, wind, geothermal, hydropower, biomass and landfill gas
  - E.O. 13123 calls upon federal agencies to purchase green power
  - Study planned by PRO and NETL, “A Proposed DOE Policy for Life Cycle Cost Justification of Green Power Projects at Federal Facilities”



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# Solicitation

- multiple IDIQ awards
- \$50 million in total
- RFP issued 12-22-00
- closing date is 3-27-01
- awards expected by 10-01
- Offerors must identify a Federal facility for their proposal
  - limited market assessment was provided in RFP

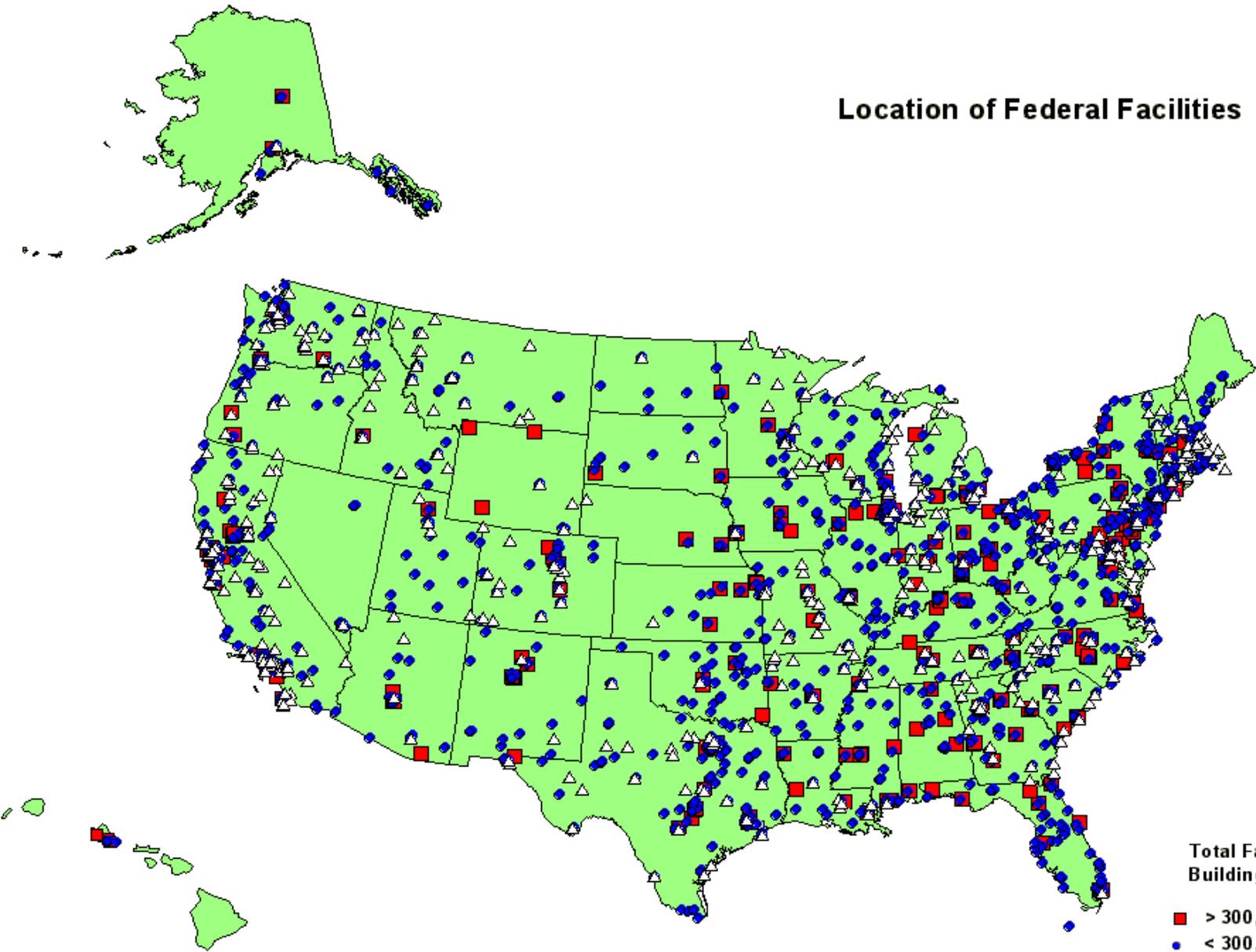


## Preliminary Market Assessment

- **Lists large Federally-owned facilities that are within 5 miles of a landfill or wastewater plant**
  - assessments for other biomass fuels are planned
  - proposals are not limited to sites contained in assessment
  - assessment identified only a fraction of potential “matches”
- **Omits Federal facilities with less than 300,000 ft<sup>2</sup> & all Air Force facilities**
- **Facility profiles include:**
  - facility name and address
  - building types / square footage (from FEMP)
  - state average gas and electricity rates (from EIA)
- **A similar market assessment for wood wastes is planned**



# Location of Federal Facilities



**Total Facility Building Size**  
■ > 300,000 sq ft  
● < 300,000 sq ft  
△ Unknown

Sources: FEMP Regional Federal Facility Data.  
GSA Worldwide Real Property Inventory System.

Air Force facilities were omitted.

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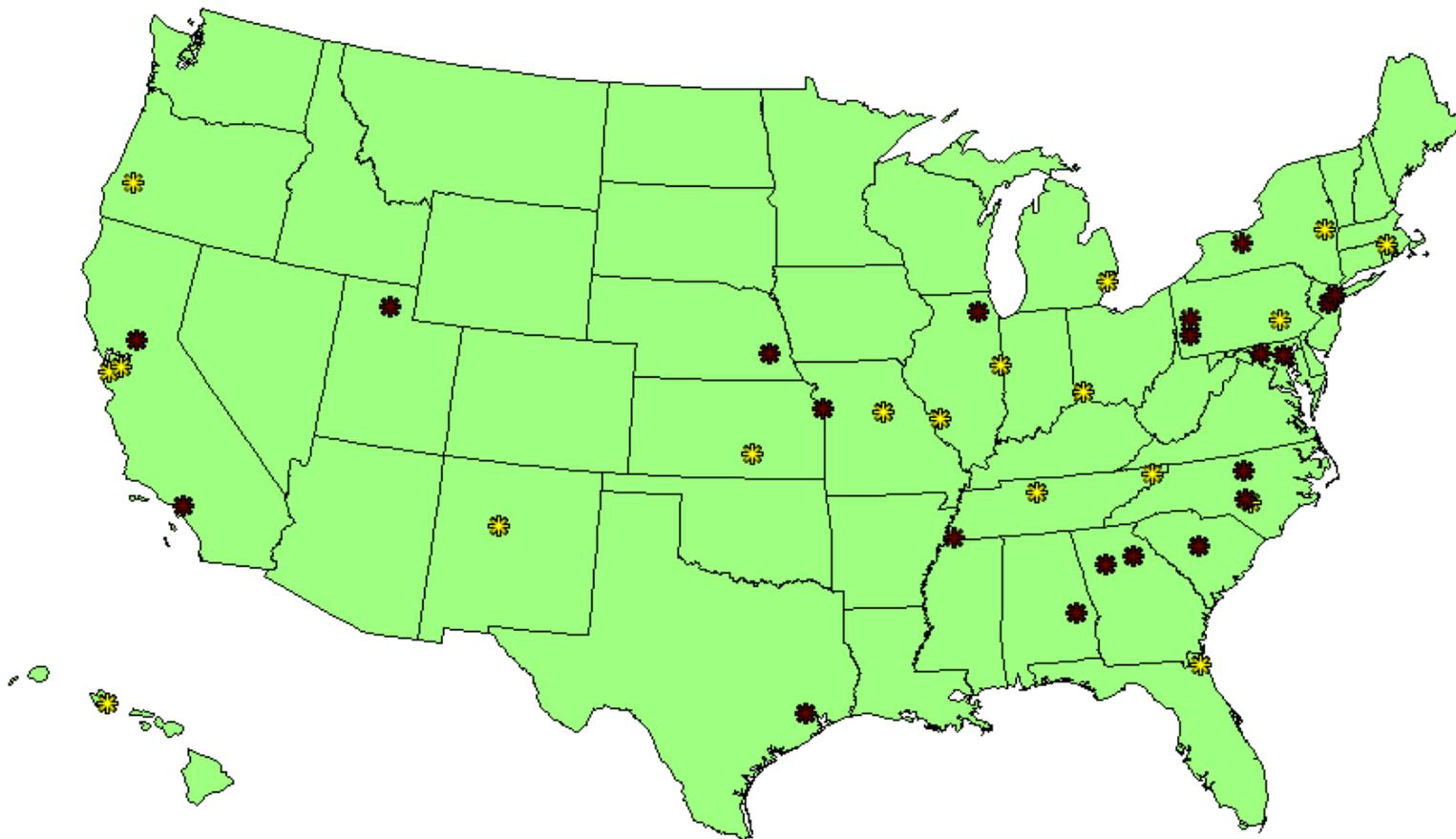
# Market Assessment, continued

- **Landfills**

- data provided by EPA's Landfill Methane Outreach Program
- landfills with existing gas projects were omitted
- 22 landfills are within 5 miles of 39 large Federal facilities
- Landfill profiles include:
  - landfill name & address
  - tons of MSW in place
  - owner / operator contact information



## Landfills Near Federal Facilities



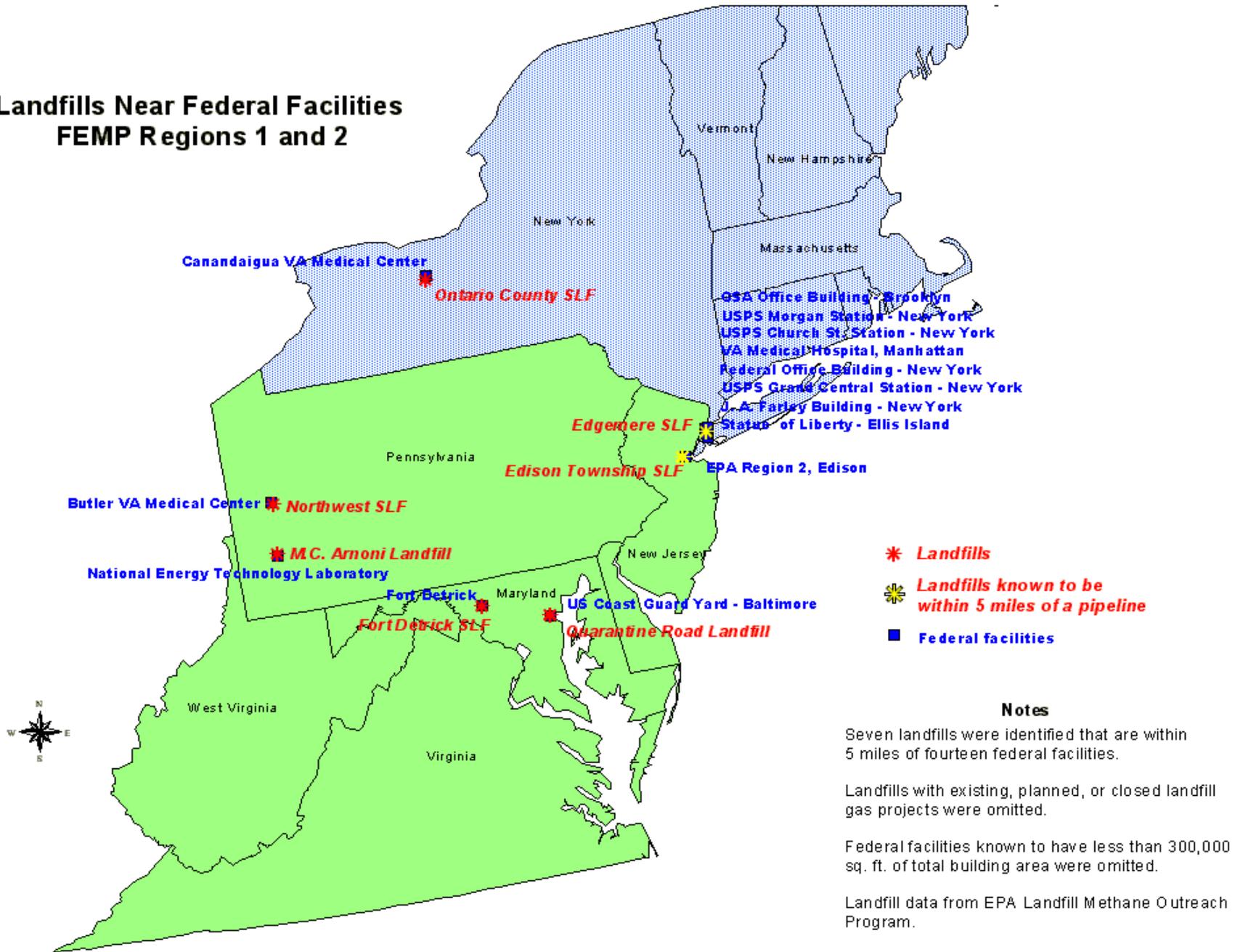
### Notes

Landfill data from EPA Landfill Methane Outreach Program, State Landfill Profiles.

Federal facilities known to have less than 300,000 sq. ft. of total building area were omitted.

-  Landfills within 5 miles of federal facilities that have operational, under construction, planned or shut down LFG projects.
-  Landfills within 5 miles of federal facilities without existing LFG projects.

# Landfills Near Federal Facilities FEMP Regions 1 and 2



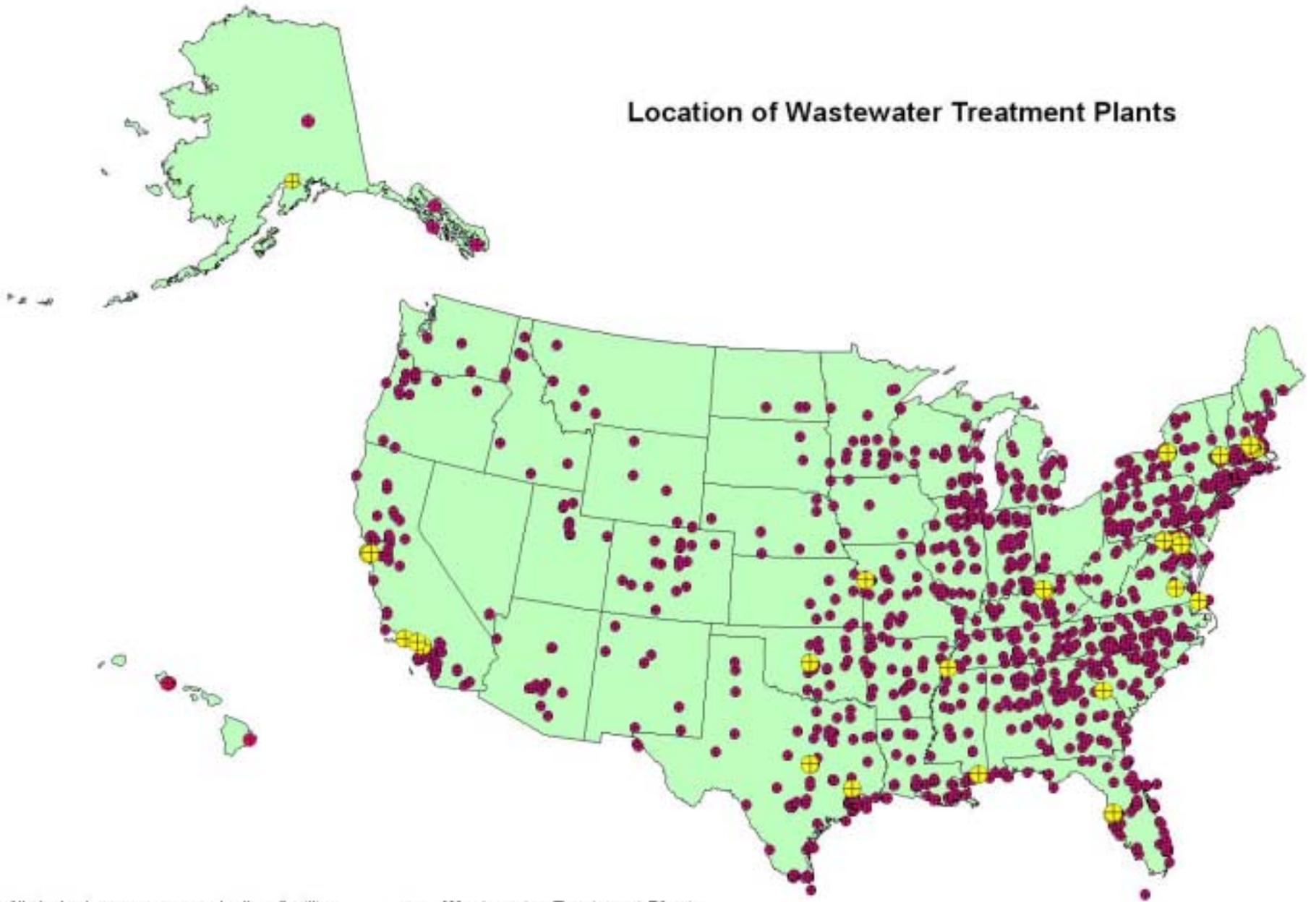
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# Market Assessment, continued

- **Wastewater treatment plants**
  - small plants that are likely aerobic (<3 MGD) were omitted
  - EPA's Water Discharge Permit (PCS) database
  - 34 wastewater treatment plants are within 5 miles of 31 large Federal facilities
  - plant profiles include:
    - NPDES # and address
    - type of ownership
    - average flow rate



## Location of Wastewater Treatment Plants



All plants shown process greater than 3 million gallons of wastewater per day.

Federal facilities known to have less than 300,000 sq. ft. of total building area were omitted.

- **Wastewater Treatment Plant**
- ⊕ **Wastewater Treatment Plant within 5 miles of a large Federal Facility**



## Wastewater Treatment Plants Near Federal Facilities FEMP Region 2

- *Wastewater treatment plants*
- ⊕ *Wastewater treatment plants known to be within 5 miles of a pipeline*
- **Federal facilities**

### Notes

Six wastewater treatment plants were identified that are within 5 miles of five federal facilities.

Federal facilities known to have less than 300,000 sq. ft. of total building area were omitted.

Wastewater treatment plants known to process less than 3 million gallons of wastewater per day were omitted.

## For More Information...



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  - (select Business, then Solicitations)



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# Questions?

