

Landfill Gas and other Waste-to-Energy Options for Municipalities

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Overview of Presentation

- Who we are -- public power and AMP-Ohio
- Balanced energy portfolio approach
- Baseload needs v. other electric supply needs
- Landfill gas and other waste-to-energy options – how they fit
- Summary and questions

Public Power in Ohio

Municipal electric systems (or public power) are one of three types of electric providers in Ohio

- 86 municipal electric systems
 - Ranging in size from Cleveland Public Power (almost 80,000 meters) to Village of Custer (107 meters)
 - Serve approximately 360,000 customers in Ohio
 - About 6 percent of customer base in Ohio
- 26 rural electric cooperatives
 - About 6 percent of customer base in Ohio
- 4 investor-owned utilities
 - About 88 percent of customer base in Ohio

AMP-Ohio at a Glance

- American Municipal Power – Ohio, Inc. (AMP-Ohio) is a non-profit corporation organized in 1971
- Currently serves 122 member municipal electric systems (locally owned utilities – part of city or village) in 6 states
- Membership represents approximately 539,000 customers across Kentucky, Michigan, Ohio, Pennsylvania, Virginia, and West Virginia

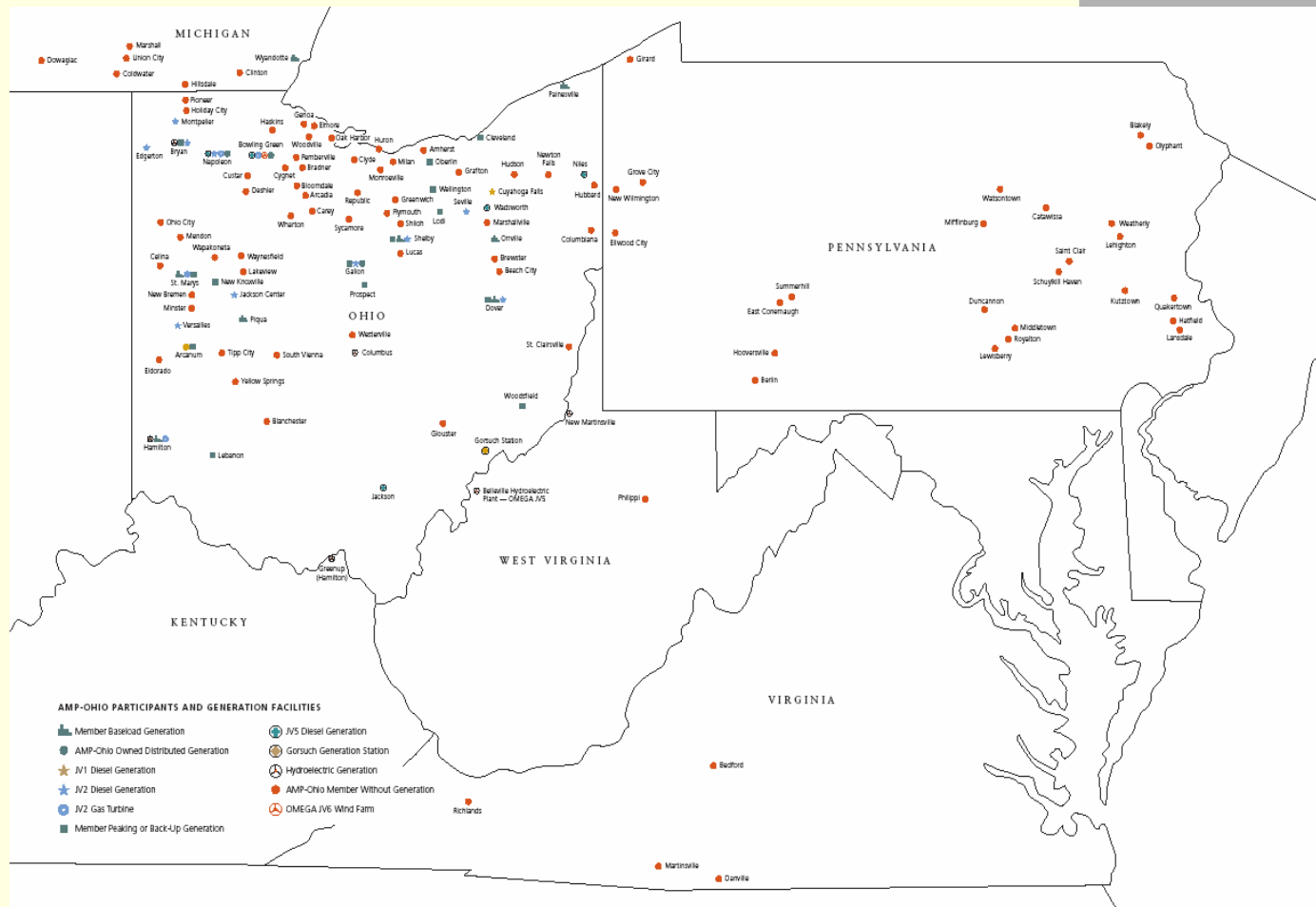


What We Do...

AMP-Ohio:

- owns / operates electric generating facilities – coal, natural gas, diesel, hydro, wind, landfill gas
- Provides wholesale generation, transmission, and distribution services for members
- Coordinates, negotiates, and develops power supply options and interconnection agreements
- Provides other membership services

AMP-Ohio Members



AMP-Ohio's Balanced Energy Resource Portfolio

- Key aspect of our sustainability commitment
- Fuel diversity:
 - Lowers overall risk
 - Reduces environmental footprint
 - Allows choice of supply for members
 - Reduces market cost exposure for members
- Increased focus on conservation and energy efficiency (Strickland Administration's "fifth fuel" or electricity supply resource)

AMP-Ohio's Generation Profile – Owned or Controlled Units

- Generation mix (2007):
 - 1,135,218 MWh of coal (74.3%)
 - 386,570 MWh of renewables (25.3%)
 - Hydro – 209,772 MWh
 - Landfill gas – 162,042 MWh
 - Wind – 14,756 MWh
 - 5,111 MWh of natural gas and diesel (0.4%)
- Peak load of 3000 MW
- AMP-Ohio currently relies on the market for approximately:
 - 62% of baseload needs
 - 95% of intermediate needs
 - 20% peaking needs

Adding Options to Meet Expected Baseload and Other Electric Supply Needs

■ Baseload Options:

- In permitting stages on the American Municipal Power Generating Station (AMPGS) in Meigs County, Ohio
- Partner in Prairie State Energy Campus (mine mouth coal plant in southern Illinois)
- Reviewing nuclear options, especially for CO₂

■ Non-Baseload Options:

- Hydro – over 300 MW on Ohio River under development
- Landfill gas – considering about 50 additional MW
- Wind – considering about 100 additional MW
- Various “distributed generation” projects, including waste-to-energy

AMP-Ohio and Renewables

- Existing renewables add diversity to overall generation portfolio
 - 42 MW Belleville hydroelectric plant
 - 34 MW landfill gas
 - 7.2 MW wind
- Green-pricing program allows customers to support additional renewable development
- Sale of “renewable energy credits” (RECs) supports projects financially
- Connecting projects directly to member distribution systems eases and lowers cost of interconnection

Current AMP-Ohio Renewable Generation Facilities



AMP-Ohio's Current Landfill Gas Projects

- Owned by Energy Development, Inc.
- Operated by AMP-Ohio
- AMP-Ohio purchases electric output from 3 facilities (34 MW combined), which is shared with 37 participating member communities
 - Carbon Limestone landfill
 - Ottawa County landfill
 - Lorain County landfill
- Shared REC agreement
- Expansion under consideration

Other Waste-to-Energy Options

- Landfill Gas

- New projects directly connected to members' systems, if possible

- Other Biogas

- Dairy / hog manure, food processing wastes
- Wastewater treatment plants

- Biomass

- Wood product waste
- Municipal solid waste, industrial product waste

Why Waste-to-Energy?

- Can be particularly attractive to municipal electric systems
 - Can solve local waste issues
 - Can be used to retain / attract large commercial and industrial customers – “we’ll take care of this for you”
 - Distributed generation provides local operation / control benefits
 - Partnership opportunities – leverage benefits
 - Potential savings – lower waste-disposal costs, etc.

“Renewable Realism” Drives Decisions

- Intermittent nature of most renewables does not make them suitable for essential baseload generation
 - But can be fit into power supply portfolios to meet non-baseload needs
- Renewable resources vary greatly from place to place (as do governmental policies) – one size does not fit all
 - What works in Europe (or New Jersey) does not necessarily work in Ohio, for many reasons
- Many costs have decreased as technology has improved, but most renewables are still above market (particularly with demand and construction costs increasing)
 - But cost-effective options do exist, particularly when CO₂ and other benefits can be taken into consideration

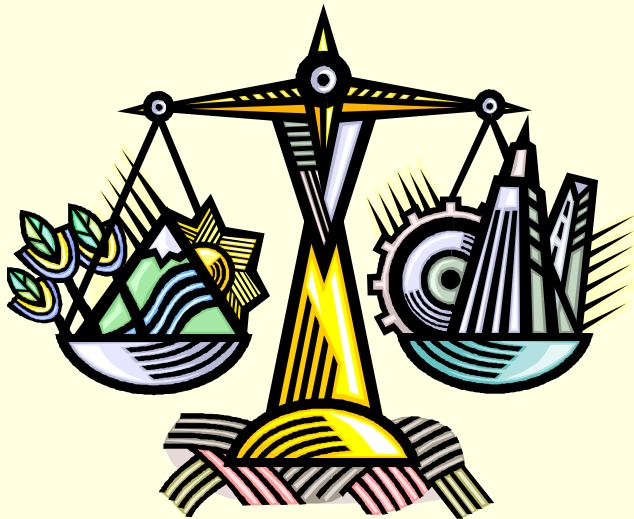
Other “Drivers” for Renewable Energy Project Development

- State renewable portfolio standards (RPS)
 - New Ohio requirements for investor-owned utilities are expected to increase demand and price for RECs
- CO₂ and other greenhouse gas considerations
 - Potential double benefits from GHG reduction and renewable production from biomass / biogas / landfill gas
 - Expected state, regional, or federal requirements in the future

“Renewable Realism” Fits with Balanced Portfolio Approach

- Smart development of cost-effective renewable projects ensures most “bang for the buck”
- Go with what you know – lower learning curve
- AMP-Ohio’s cost of money (municipal bonds) is lower than most other developers

In Summary...



- AMP-Ohio's balanced energy portfolio development strategy includes baseload and non-baseload assets
- Cost-effective renewables are an important part of the mix
- Landfill gas and other waste-to-energy projects can have unique appeal to municipal electric systems

Questions?

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