

## Methane...a potent greenhouse gas



Changes in cattle feed and processing could reduce methane emissions from cattle by over 20% over 2000 levels.

Methane is an extremely potent greenhouse gas, 23 times stronger than carbon dioxide. It is emitted from landfill decomposition, liquid manure management systems (ponds, lagoons, and holding tanks), cattle, coal mines, and natural gas pipeline leakage.

### Technology Options

Commercial technologies and practices could reduce Ohio's methane pollution by over 3.4 million tons by 2030.

#### Landfill Recovery

Methane emitted from landfills can be captured and burned by converting the methane to CO<sub>2</sub>. This process captures roughly 60% of the methane. Ninety percent of the captured methane can either be burned as fuel for generating electricity or converted to vehicle fuel.

#### Bio Digesters

Animal waste that is stored in ponds, lagoons, and holding tanks are the primary source of methane from animal waste management. Biodigester systems generate and capture the methane created from the anaerobic digestion of manure. This methane can be used for heating and electricity generation.

## the OEC'S Top Ten

1. Carbon bio capture
2. Carbon geological capture
3. Bio products
- 4. Methane emission reductions**
5. Greenhouse gas markets
6. Electric & heating efficiency
7. Vehicle efficiency
8. Wind & solar power
9. Low or no-carbon energy systems
10. Cleaner diesel

### Cattle & Feed Efficiency

Cattle in Ohio produce 69,555 tons of methane. Changes in cattle feed formulation and processing could reduce emissions by 20%-30%. Better grazing management, dietary supplementation and feed modifications are important strategies to implement.

### Coal Mine Methane Recovery

Coal seams contain methane which is released during the coal mining process. Degasification systems that remove methane before, during, or after mining are now available. If removed before mining begins, methane can be turned into fuel for electricity generation or vehicle use.

### Natural Gas Infrastructure Maintenance

Natural gas pipelines, wells, and processing facilities emit over 228,000 tons of methane a year in Ohio. Examples of technologies that can reduce methane emissions include:

- composite wrap repairs
- fuel gas retrofit for blow-down valves
- replacing high bleed pneumatics with low bleed systems



# Recommendations for a better Ohio

## Implement a waste methane production tax credit

A production tax credit provides companies that generate electricity a credit on their corporate franchise tax on a per kilowatt hour basis.

## Create an advanced technology portfolio standard

This standard would require power suppliers to obtain a portion of their power from renewable energy sources, energy efficiency, and even coal waste.

## Develop a state government procurement requirement

The state government should adopt a procurement policy that requires at least 10% of its energy from cleaner energy resources, including methane from agriculture, coal and municipal waste sources.

## Promote cattle feed efficiency

The Ohio Department of Agriculture and The Ohio State University Agriculture Extension Program should work with cattle operations to develop a methane emissions baseline and monitoring operation as well as a set of procedures that allow operators to register reductions with a state registry. (for more recommendations, see p. 33 of the report)

## Incorporate best management practices for pipelines, storage, and processing

All of Ohio's gas producers, processors, distribution companies, and transmission companies should participate in U.S. EPA's voluntary Natural Gas STAR Program.

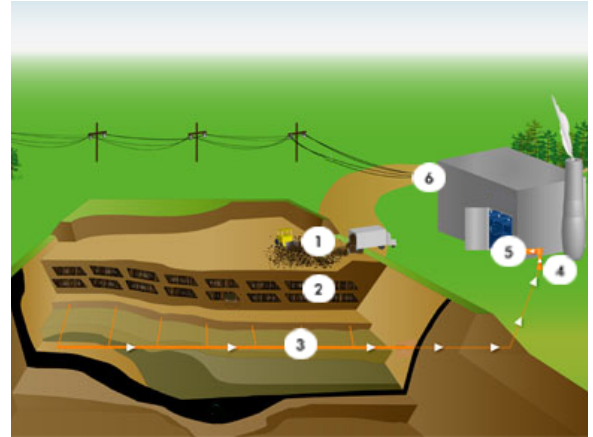
## Promote a transparent, standardized grid Interconnection

The Public Utilities Commission of Ohio should develop a tracking system that provides transparent tracking of how electric transmissions and distribution companies apply the Institute of Electrical and Electronics Engineers (IEEE) interconnection standards.

\*For more steps see p. 34 of the Ohio Climate Road Map, Part 2.

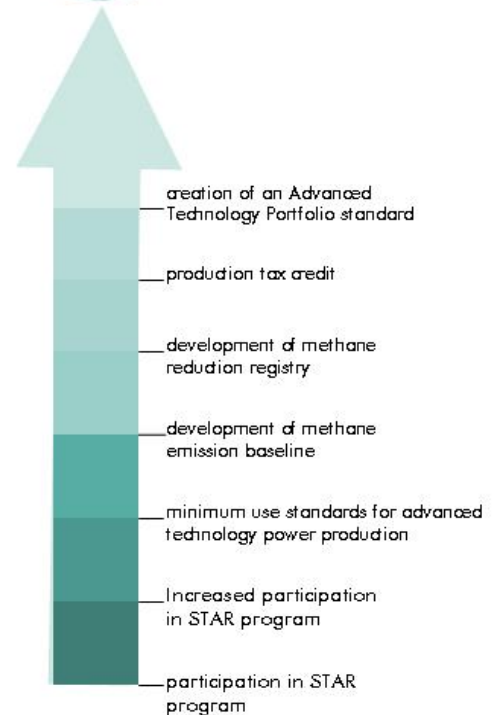
## Foundation for Action

- Over 32 megawatts of landfill methane power generation have been sited in Ohio.
- Two of Ohio's major natural gas distribution companies, Columbia and Cinergy, participate in the U.S. EPA's voluntary Natural Gas STAR program which focuses on methane leakage prevention from pipeline and processing infrastructure.



### How Power is Created from Landfill Waste

- Garbage is collected, delivered to the landfill and compounded.
- Decomposition of the garbage causes the release of gases.
- Pipes underneath the landfill remove the gases (mostly methane).
- Gases are pumped to an engine.
- The engine powers a generator.
- The generator creates electricity, which is then added to power supply.



**Toward a cleaner earth**

Read all details of the OEC's global warming study, Ohio Climate Road Map, Part 2 at [www.theOEC.org](http://www.theOEC.org)