

# **Preparing for Town Meeting**

## **Topic: Waste-to-Energy Technologies**

### **Teacher Preparation:**

- Gain or review your knowledge of waste management issues and technologies. (Some resources are listed at the end of the accompanying slide show.)
- Through a pre-test, class discussion, survey, etc., determine students' current knowledge, perspectives, and misconceptions about waste management in their own community. Keep a record of the responses so you can perform some action research on their increasing knowledge and interest after their group studies and town meeting participation.
- Decide how to motivate student interest in the issues and perspectives of people in "Anywhere, USA."
- Form the student groups – by students' own selections or by assigning roles. Your acquaintance with the Talking Points sheets will help this process.

### **The Roles:**

- Mayor
- Presenter from a company that engineers and installs landfill gas-to-energy technologies
- Community representatives who will offer testimony representing specific organizations' viewpoints on the Talking Points sheets:
  - MSW-'r-Us, a refuse hauling and management company (MSW - Municipal Solid Waste)
  - Anywhere, USA Chamber of Commerce
  - Electrons Unlimited (a local energy company)
  - County Commissioners - Any County, USA
  - 3R Environmental Advocates - Big City, USA
  - Citizens for Wise Waste Disposal - Anywhere, USA
  - Landfill Neighbors

## **Student Preparation:**

- Through group research, gain knowledge and personal perspective regarding landfill gas-to-energy technologies. Begin with the resources at the end of the PowerPoint slides and continue with your own investigations.
- Identify pro's and con's of commonly used waste management technologies and practices.
- Adopt the perspectives of the chosen or assigned Talking Points group. (Students may not agree with the perspectives of their assigned Talking Points group; however, assuming these roles for the town meeting activity allows a variety of perspectives to be compared and evaluated).

# Chamber of Commerce – Anywhere, USA

## Town Meeting Talking Points 1

**Background:** You are representatives from the local business association in Anywhere, USA. Your appearance at the town hall meeting is specifically to address issues important to the members of the Chamber of Commerce. Below is a set of talking points you may use for your testimony. Included are both positive points and points of concern. You are certainly not limited to these points. Any information you wish to add to your testimony is up to you. Your job is to limit your testimony to no more than 5 minutes and to stay in character for the entire simulation.

### Points in favor of extracting energy from this site:

1. Development of new industries would provide new high-paying jobs for the area.
2. The city and county anticipate more tax revenues directly from businesses operating at the landfill site.
3. This is a solution for the problem that uses market forces and doesn't require government subsidies.
4. Reduction of waste disposal costs because of revenues that will make energy producers self-supporting.

### Points of concern about proposal:

1. The need to pay for new infrastructure to accommodate new facilities (roads, fire protection, etc.) Who will pay?  
According to a 2000 World Bank report incinerator plants are at least twice the costs required for landfills (incinerator=\$25-\$100/ton vs. landfill=\$10-\$40/ton)
2. Quality of life issues. Will local air quality be degraded? Surface water quality? Is there a danger to groundwater sources, in particular – the city drinking water supply?  
Typical emissions from incinerators include compounds such as acid gases, particulates, carbon monoxide, nitrogen oxides, sulfur, chlorine, metals, dioxins, furans and at least 190 volatile organic compounds.
3. Will there be a shift in tax burden through tax credits to companies that come in to develop these new industries?  
Energy revenues are often overestimated.
4. Will there be environmental monitoring of the site and who is responsible for that?

**Optional point of view:** This is what we've always done and it has worked so far. Just expand the landfill footprint

# Landfill Neighbors – Anywhere, USA

## Town Meeting Talking Points 2

**Background:** You are representatives from the local neighborhood found near the landfill in Anywhere, USA. Your appearance at the town hall meeting is specifically to address issues important to the members of the community that resides in closest proximity to the landfill. Below is a set of talking points you may use for your testimony. Included are both positive points and points of concern. You are certainly not limited to these points. Any information you wish to add to your testimony is up to you. Your job is to limit your testimony to no more than 5 minutes and to stay in character for the entire simulation

### Points in support of energy production at landfill:

1. Removal of wastes from landfill.
2. Something has to be done so that the neighborhood won't be lost to expansion of the landfill.

### Points of concern with energy production at landfill:

1. Increased odors
2. Potential for slope stability problems that might threaten neighborhood.
3. Increased longevity of site. The sooner the landfill is closed the better.
4. Industrial development within the neighborhood such as electrical grid expansion, wider and busier roads, pipelines, etc..
5. Degradation of the aesthetics of the area beyond the current impacts.
6. Increased air pollution.
7. Lowering of property values. A review of ten studies that examined the impacts of landfills and incinerators on property values found that half of the studies concluded there was a significant decline in property values.
8. Composting is more favorable from a cost-benefit analysis because of higher costs of energy production technologies.

# 3R Environmental Advocates – Big City, USA

## Town Meeting Talking Points 3

**Background:** You are representatives from an outside environmental advocacy group who has traveled to Anywhere, USA for these hearings. Your appearance at the town hall meeting is specifically to address issues important to the members of the national organization you represent. Below is a set of talking points you may use for your testimony. Included are both positive points and points of concern. You are certainly not limited to these points. Any information you wish to add to your testimony is up to you. Your job is to limit your testimony to no more than 5 minutes and to stay in character for the entire simulation

### Points in favor of energy production at this site:

NONE. You are adamantly opposed to this option.

### Points against energy production at this site:

1. The cost of incineration is “disastrously expensive” (John Tierney)
2. Incineration vendors fought against advanced pollution controls and monitoring technologies thereby undermining performance of and public confidence in the technology.
3. The lack of high recycling rates, especially for materials that do not burn or release toxins if burned, work against good combustion practices.
4. Bioreactor gas production is an untested technology with no safety record to evaluate.
5. Incinerators still rely on landfills for the disposal of contaminated ash, often at sites far away, which require expensive transportation. An incinerator in Minneapolis, Minnesota sends its ash to a dump 500 miles away near Joliet, Illinois.
6. Waste incinerators generate a wider range of air pollutants than other combustion technologies. (Greenpeace)
7. According to the EPA, approximately 65-70% of all residue generated by incinerators is from the introduction of non-combustible glass and metals into then furnace. (Greenpeace)
8. A study by the Centre for the Biology of Natural Systems in New York estimates that replacing all household waste incinerators in the state with an intensive recycling program would save \$350 million annually. The same study estimated the creation of 6100 new jobs from the shift to recycling. (Greenpeace)
9. If the United States burned all its municipal waste in incinerators, it would contribute less than 1% of the countries energy needs. (Greenpeace)
10. Very few jobs are created in return for the huge economic investment in incineration. (Greenpeace)
11. People who live near incinerators are exposed to POPs (persistent organic compounds).
12. Incinerators are capital intensive rather than labor intensive.
13. Citizens and taxpayers end up paying for incinerators’ financial problems.
14. Incineration consultants and “experts” can add millions to overall costs.

15. Incineration actually encourages waste production to insure a steady stream of waste to the incinerator diverting attention away from real solutions.
16. Source of data below: Greenpeace Australia Pacific Ltd. "Burning waste is no solution" April 2003. [http://sites.greenpeace.org.au/toxics/pdfs/burning\\_waste.pdf](http://sites.greenpeace.org.au/toxics/pdfs/burning_waste.pdf) . Website presence verified in April 2007.

A 1989 study found workers at a municipal solid waste incinerator in Sweden between 1920-1985 were found to have a 350% increased likelihood of death from lung cancer.

In the same study workers were shown to have a 150% increased risk of death from oesophageal cancer and increased death from heart disease.

Workers at a municipal solid waste incinerator in Italy between 1962-1992 had a 279% increased risk of death from stomach cancer (results could be compounded by other factors like socio-economic status).

Chloracne (skin condition caused by dioxin exposure) in one worker from an old incinerator in Japan, who had a dioxin level of 360 ppt TEQ in his blood. Another worker from the same incinerator had a dioxin level of 278 ppt TEQ. No chloracne, but he was recovering from two bouts of stomach cancer of unknown medical cause.

Residents living near a municipal solid waste incinerator in Italy had a 670% increased risk of death from lung cancer.

Incinerator ash and stack emissions can damage DNA. Studies of incinerator workers in 1990 and 1992 found raised levels of substances capable of inducing genetic mutation in their urine.

Children living near municipal solid waste and hospital waste incinerators in the United Kingdom had a 200% increased risk of dying from cancer.

A 1998 study found a 126% increase in birth defects in newborn babies living near two municipal waste incinerators in Belgium.

The same study found increased allergies, cases of the common cold, health complaints and use of medication in school children living near the incinerators.

# Citizens for Wise Waste Disposal – Anywhere, USA

## Town Meeting Talking Points 4

**Background:** You are representatives from a local citizens group in Anywhere, USA. Your appearance at the town hall meeting is specifically to address issues important to the members of this newly formed citizens group. Your group formed in response to the need to address local solid waste disposal issues and to try to insure local input from average citizens. Below is a set of talking points you may use for your testimony. Included are both positive points and points of concern. You are certainly not limited to these points. Any information you wish to add to your testimony is up to you. Your job is to limit your testimony to no more than 5 minutes and to stay in character for the entire simulation

### Points in favor of energy production at this site:

1. The relative unpopularity of technologies such as landfills.
2. The potential linkages with agri-environmental / rural development policies, in which compost utilization (and production) could be encouraged.
3. Waste-to-Energy plant employees receive total annual wages in excess of \$150 million. This translates into local economic benefits of more than \$300 million. The waste-to-energy industry provides more than 6,000 jobs for American workers.
4. The value of energy produced annually at waste-to-energy plants in this country exceeds \$850 million. Waste-to-energy provides a reliable form of power because even after source reduction and recycling, the supply of fuel (trash) is dependable.
5. New Clean Air Act rules for municipal waste combustors ensure that waste-to-energy is one of the cleanest sources of power in the world. Energy is produced from trash as cleanly as it is produced from natural gas, reports a recent booklet jointly released by the U.S. Conference of Mayors, the American Society of Mechanical Engineers and others. Since the power from modern waste-to-energy plants usually replaces older oil- or coal-burning technologies, the plants can actually *improve* the air quality in the communities where they operate.
6. How clean are modern waste-to-energy facilities? Consider that in 1993, John Eppich and Don Avilla of the Los Angeles District Sanitation Department, and Joe Smisko, plant manager of the Commerce, California waste-to-energy plant, concluded that their local facility created less pollution than the trucks used to haul trash to a nearby landfill.
7. The U.S. Department of Energy has labeled waste-to-energy technology as a major part of a plan to reduce carbon dioxide emissions in the United States. By replacing fossil fuels, waste-to-energy reduces the buildup of carbon dioxide in the air. Combusting biomass - materials such as paper, wood and food waste - *does not* add to the buildup of greenhouse gases.
8. A recent air emissions sampling at a waste-to-energy facility in Indianapolis showed that sulfur dioxide

emissions were reduced by 52% over the levels produced by an old coal power generating plant.

9. Communities with waste-to-energy plants recycle an average of *33% of their trash*.
10. Waste-to-energy enables the recovery of materials that would not otherwise be recycled. Ferrous metals remaining in the ash are extracted by powerful magnets and sent to recycling centers. Since these metals are often combined with non-recyclable materials during manufacture, extraction of the metals would not be feasible without combustion. Nearly 788,000 tons of steel are recovered for recycling each year at waste-to-energy plants.
11. Each year, an additional 939,000 tons of glass, plastics, white goods, batteries, paper, cardboard, metals, yard waste and ash are recycled on-site at waste-to-energy plants.
12. Ash landfill studies conducted over the past decade show that leachate is like salty water with a metals content at about the same level as the standards set for drinking water.
13. More than 300,000 tons of ash are used annually as daily and final cover in place of soil in landfills and in roadbed construction. Ash is used as a substitute for aggregate in road base materials, building construction and artificial offshore reefs.
14. Waste-to-energy residue ash is safe for landfilling. The ash exhibits concrete-like properties causing it to harden once it is placed and compacted in a landfill. This reduces the potential for rainwater to leach contaminants in landfills into the ground.

**Points of concern about energy production:**

1. Cost to community? Who is footing the bill for all this new technology?
2. Is it really safe?
3. Do not want the facilities for energy production to be placed in another part of town. We want the production facilities at or adjacent to the landfill site.



# County Commissioners – Any County, USA

## Town Meeting Talking Points 5

**Background:** You are elected representatives from the county where the town of Anywhere, USA is located. Your appearance at the town hall meeting is because the county board has responsibility for waste disposal issues in the county and to insure the county is allowed to have final say in the way the landfill crisis will be dealt with. Below is a set of talking points you may use for your testimony. Included are both positive points and points of concern. You are certainly not limited to these points. Any information you wish to add to your testimony is up to you. Your job is to limit your testimony to no more than 5 minutes and to stay in character for the entire simulation

### Points in favor of energy production:

1. Deals with an imminent problem
2. Population in county is growing so amount of waste going to landfill will just keep increasing.
3. This can be a revenue source for the county.
4. Will bring jobs to the county.
5. New industries will expand the tax base.

### Points of concern about energy production:

1. Wary of loss of local control because of the state mandating solutions for a local problem.
2. Regulatory issues would strain an already overworked staff.
3. Would like to see some changes in waste disposal laws if this is implemented. For example: Allow organics to be included in waste stream, remove requirement for plastic cover over closed cells in order to maximize LFG (landfill gas) production.
4. Would like to see voluntary agreements on proposed solutions rather than imposed solutions.
5. This proposal would likely only delay the landfill becoming filled to capacity. Is time gained worth the investment?

# **Electrons Unlimited – Anywhere, USA**

## **Town Meeting Talking Points 6**

**Background:** You are representatives from the local electrical utility in Anywhere, USA. Your appearance at the town hall meeting is specifically to address issues important to the corporation that owns and runs the utility. Below is a set of talking points you may use for your testimony. Included are both positive points and points of concern. You are certainly not limited to these points. Any information you wish to add to your testimony is up to you. Your job is to limit your testimony to no more than 5 minutes and to stay in character for the entire simulation

### **Points in favor of energy production from this site: (support is rather lukewarm)**

1. Possible alternative source of electrical energy.
2. Change in regulations for this facility may help the utility company in other situations.
3. Might be more supportive if the utility was a partner in the venture.

### **Points of concern about this venture:**

1. The utility can already generate enough energy for current and short term projected demand. Why invest in another energy generation technology?
2. Electrical utilities are mandated to buy excess energy produced from alternative sources. There should be a discount for what the energy company would have to pay to the new producer.
3. The utility should get a tax credit for the new transmission grid that would need to be built in order to move electricity onto the grid from the new facility.
4. The utility would like to see in place regulations that make energy production an issue in all waste management decisions.
5. Would look for long term commitments and guarantees from the other partners and the local government agencies.

# **MSW-R-US**

## **Refuse Management Corporation**

### **Town Meeting Talking Points 7**

**Background:** You are representatives from the largest waste hauling business that serves the town of Anywhere, USA. Your appearance at the town hall meeting is because you have a direct economic interest in any decision that is made regarding the landfill crisis. Below is a set of talking points you may use for your testimony. Included are both positive points and points of concern. You are certainly not limited to these points. Any information you wish to add to your testimony is up to you. Your job is to limit your testimony to no more than 5 minutes and to stay in character for the entire simulation

#### **Points in favor of energy production at this site:**

1. A combination of technologies can effectively address the landfill crisis.
2. Does not compete with recycling or composting programs.
3. Federal regulations already require active gas collection at landfills over 3.27 million cubic yards in capacity. This landfill meets that requirement.
4. Incinerator ash is safe and can be used for a number of other purposes such as roadbed material, road aggregate, asphalt mixture, daily and final landfill cover, construction of cement blocks and artificial reefs.
5. Management of the landfill for methane production (bioreactor technology) can have the following benefits:
  - a. More rapid stabilization of waste
  - b. Minimize long term environmental liability
  - c. Increased settling of up to 20% will gain more landfill space,
  - d. Enhanced gas production
  - e. Reduced leachate toxicity.
  - f. Improved leachate storage and treatment at lower costs
  - g. Reduces greenhouse gas emissions
  - h. The environmental benefits of switching to anaerobic digestion are greater than switching to composting.
6. Company would not have to look for alternative sites for trash hauling.
7. May help stabilize or even reduce tipping fees.

#### **Points of concern about energy production at this site:**

1. Much of this technology is not thoroughly tested.
2. Costs cannot be passed on to customers of landfill.
3. Company would like some long term commitments before it changes its procedures to accommodate new industry.