Dynamic Energy, LLC

Thessaloniki Waste to Energy Project

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Introduction

- Dynamic Energy, LLC's presentation of a Waste to Energy (WtE) plant to replace current money leaching landfill in Thessaloniki prefecture
- Currently there is an strong initiative from the European Union to develop waste to energy programs in every country in the Union
- Current landfill models - very expensive, lack of land, undesirable to residents
- The project has received support on the national and local governmental levels

Location - Thessaloniki

- Thessaloniki, located on the coast in Northern Greece, is the second largest city in Greece and boasts a busy commercial port.

- The city attracts many overseas tourists as well as business people, in addition to the 2 million residents

- All this traffic adds to the city's waste production. Our research of Greece shows us that this region of central Macedonia is an excellent location for a WtE plant with a specific point of installation at the waste landfill in Mavrorahi, Thessaloniki.

Current Waste Removal Process in Mavrorahi

- Waste management in Thessaloniki is the responsibility of FODSA, a public company managing waste for the Association of Local Authorities of the prefecture of Thessaloniki.

- FODSA helps the country improve its recycling rate to comply with the revised framework directive and to provide a closed loop system for it's recyclable materials.

Current Waste Removal Process in Mavrorahi

- Mavrorahi sanitary landfill site
  - All non-recyclable waste is delivered to the Mavrorahi sanitary landfill site, which disposes of the waste produced across Thessaloniki as well as Kalamaria, Pylea, Neapoli, and Thermi
  - Recyclables are delivered to Finikas, a transfer station in a separate location
- Average daily amount of municipal solid waste received by the landfill is 1,100 tons
  - Theoretical amount of waste that can be received is more than 1,800 tons per day
  - However, technical problems limit the amount to 1,100 tons
  - Remaining waste is delivered to other landfills
  - WtE plant can remediate this problem

Benefits of Waste to Energy Plant

- **Production and use of energy**: Electricity and heat generated from waste provide more environment-friendly source of energy

- **Reduction of waste going to landfill**: Waste is diverted to an energy processing unit thereby saving valuable land.
  - **Avoid methane emissions from landfills**

- **Benefit to the local community and economy**: As waste to energy plants are generally setup locally it creates jobs, the local community benefits and materials are sourced locally.

Our WtE Plant

- WtE plant will increase the capacity and efficiency of waste removal at the Mavrorahi site
  - Will increase the amount of waste received to more than 1,800 tons (currently 1,100 tons)
  - Eliminates the need to transport excess waste to other landfills

- Other municipalities located outside the Mavrorahi region can also benefit from our WtE using strategically placed transfer stations
  - This increases waste received at the WtE, increasing production of the energy product and ultimately increasing revenue

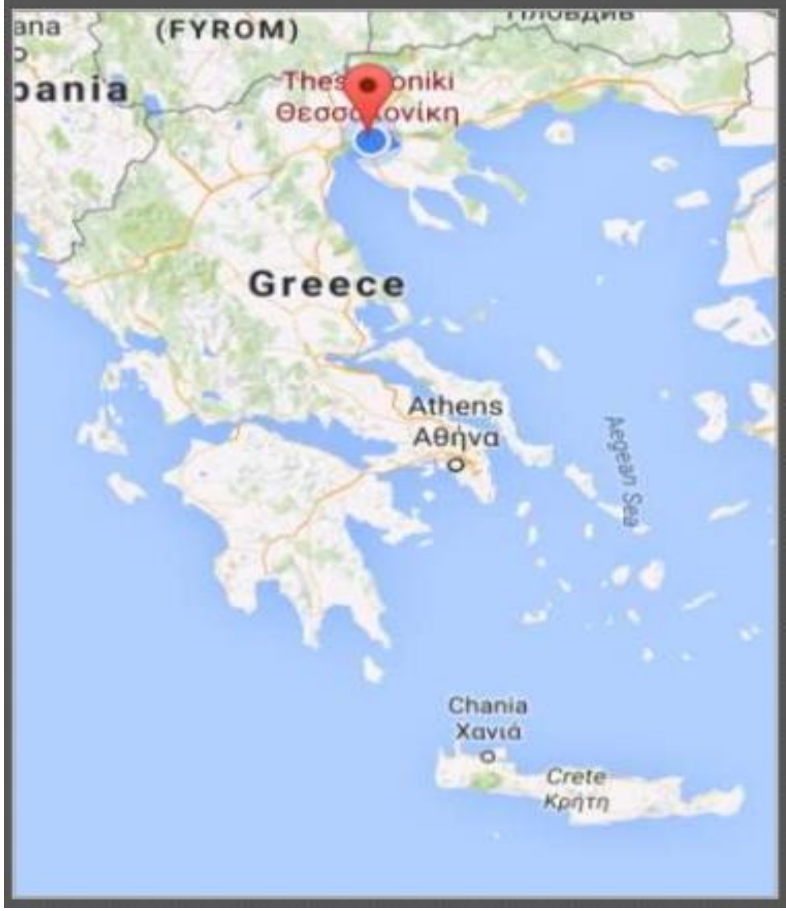
al, Government, and Environmental Agency Support

- Authorities of Thessaloniki prefecture and the national government of Greece are both supportive our WtE plant
  - Discussions already made to commence “Build, Operate, and Transfer” (BOT) of the project
- The government will provide great economic/tax incentives
  - Land donation for construction of WtE plant
  - Tax exemptions for the first 10 years, and a stable tax policy for the 15 years thereafter
- Government concession = 30 to 35 years
- Reduced time required to acquire permits
  - 4-6 months as opposed to 1 year

Revenue Generated from WtE

- Tipping fee (Price range) = **22 to 30 €**
  - (current value is 22 € with a yearly increase that will lead to a value of 30 € within 3 years
- Electricity to grid (price range) = **101,03 € MW/h to 105,42 € MW/h**
- The profitability of the investment will be based on billing the municipalities per metric ton of waste, according to the prices set in Greece, and from selling the energy generated to the Public Power Company (PPC).

Solid Waste Management of Thessaloniki's prefecture



Range: 3.683 km^2
Existing population: 1.110.312 res.

Distance Between Mavrorahi and Thessaloniki City Central = 35 km

Current Mavrorahi Landfill

Arial View of Mavrorahi Landfill

Ideal location due to preset infrastructure necessary pipework for the transport of leachate and methane gas was previously installed at site

Conclusion

- The Thessaloniki prefecture cannot rely solely on sanitary landfills as the long term solution for treating non-recyclable waste

- The local and national authorities welcome Dynamic Energy, LLC's proposal for the development of a WtE plant as a long term sustainable solution to this problem.