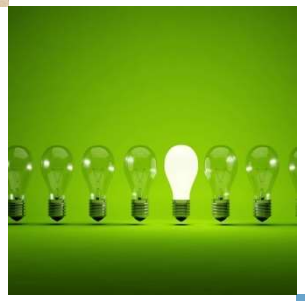
NEXTGEN

GREEN POWER

# Greater Hartford Pilot MSW to Renewable Diesel Facility

## Supplemental Plastic Waste Processing

BIOMASS



WASTE TO ENERGY

**April, 2021**

# Background

- NextGen Energy is a U.S. renewable energy development company; active in Asia and the Americas, with a project office in Singapore
- Focus is on biomass power, biofuel projects, and low carbon waste-to-energy projects (Municipal Solid Waste)
- NextGen's management has over 100 years of collective experience developing and financing independent power projects on a Build-Own-Operate basis
- Most projects are based on non-recourse debt finance approach, as is standard in the independent power industry

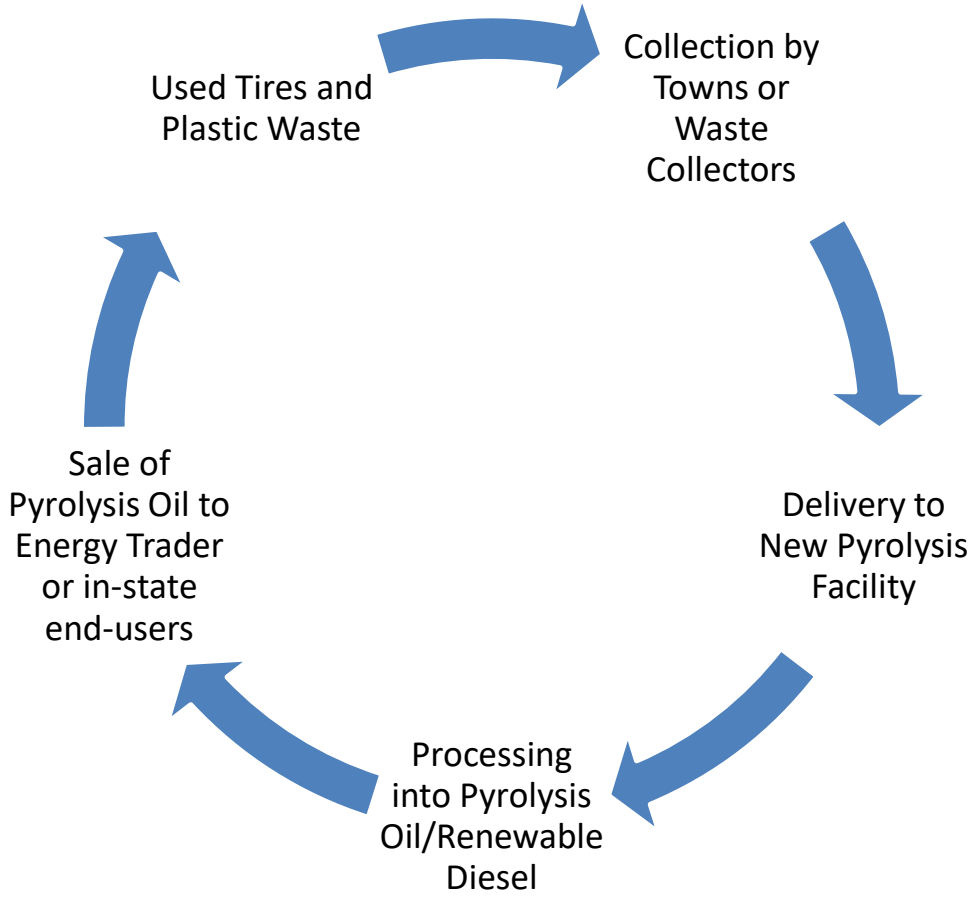
# Proposed MSW to Renewable Diesel Pilot Project

- 60 tons/day or 180 tons/day Phase I, MSW processing facility
- Use of low carbon pyrolysis technology; replication of project under development in Singapore
- No combustion; gasification process is used
- 100% Private Finance
- A major global energy trader has agreed to buy all biofuel output and affiliates have agreed to finance the project's capital costs
- 2022/2023 commercial operation
- Greater Hartford project site (outside city of Hartford)

# No Tipping Fees; Greater Hartford Site

- MIRA would divert 60 or 180 tons/day of MSW to the pilot facility
- No tipping fees to be charged; MIRA keeps all tipping fee revenue
- Sites under consideration south of Hartford, and near the Massachusetts border
- Viable alternative to shipping MSW out of state

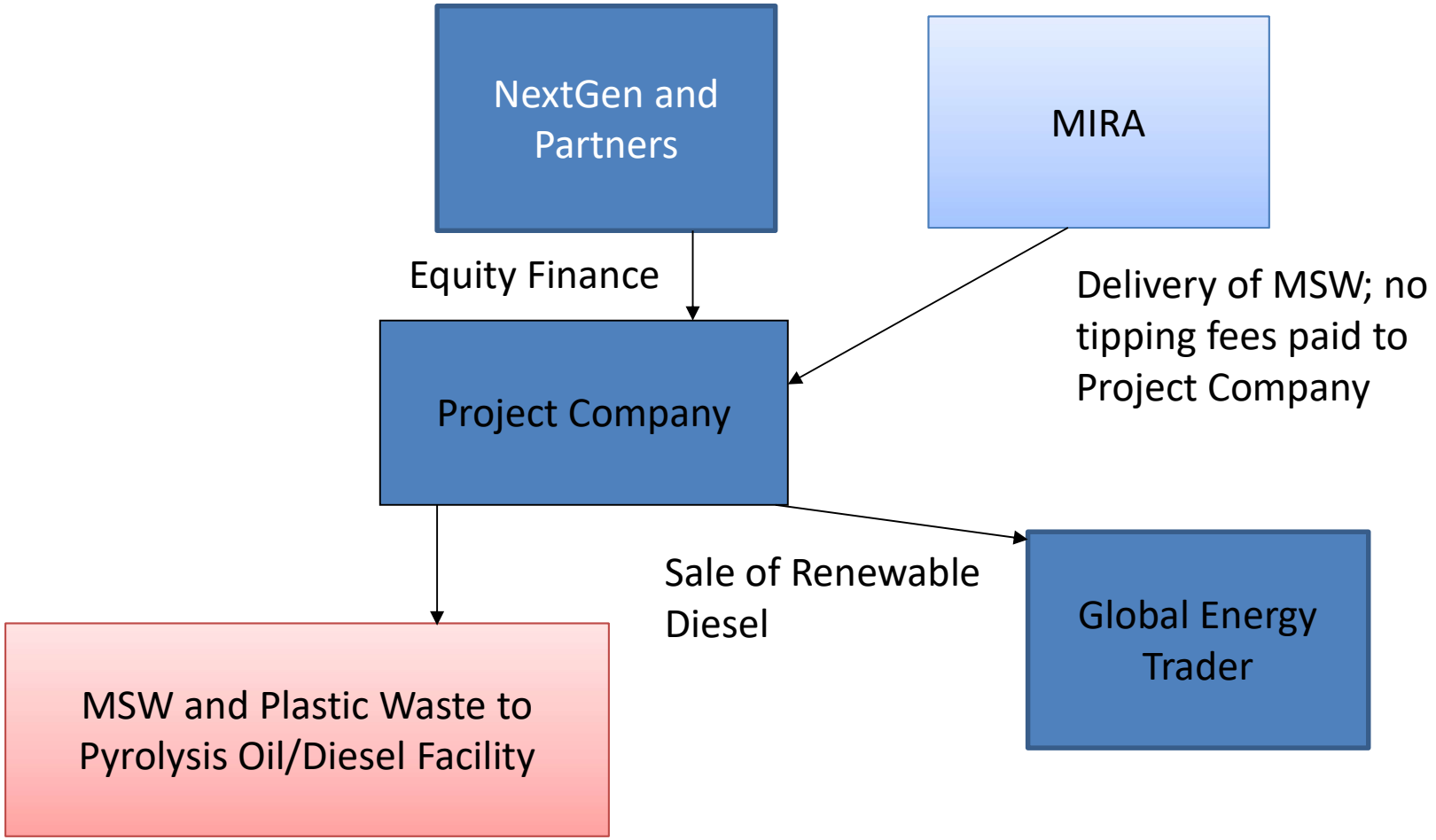
# Connecticut Circular Economy Model



# Replication of Singapore Project

- The Pilot Project is a replication of Plastic/Tire Waste to Pyrolysis Oil/Diesel Projects in Singapore, in cooperation with one of Singapore's leading recycling firms
- Zero sulfur renewable diesel to be utilized by public works vehicles and maritime customer

# Project Structure; 100% Private Finance

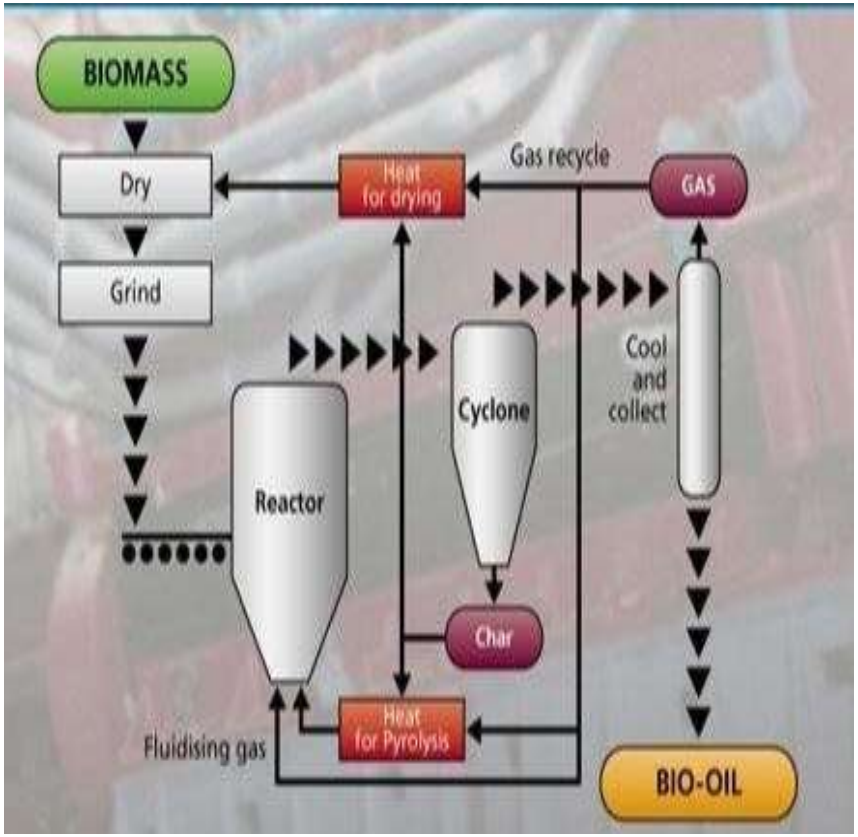


# Pyrolysis Technology

## Established Technology

- Pyrolysis systems have been used for decades to process used tires and wood waste into biofuel
- Recent applications have focused on Municipal Solid Waste processing as an alternative to incineration
- Low carbon outcomes
- Waste is heated at a high temperature under oxygen-starved conditions and converted into a synthetic gas, and then further processed into liquid fuel
- No combustion
- System can process plastic waste, Municipal Solid Waste, used tires and wood waste
- Partial contamination of plastic waste is not a problem; greater percentage of plastic waste can be recycled

**Pyrolysis Process [Image Source: Bio-Energy Consult]**



# Plastic Waste as Additional Feedstock

# Need for Plastic Waste Solutions

- In 2019, China banned the import of most plastic waste
- Recycling firms in the U.S. used to pay municipalities for segregated plastic waste, which was in turn exported to China
- After the China ban, many municipalities no longer earn revenue from plastic waste, and must pay for plastic waste disposal through tipping fees at incinerators or out of state landfills
- A portion of the plastic waste exported to Southeast Asian markets is dumped in the open, contributing to ocean plastic waste pollution

# Plastic Waste Crisis

*“Only 9% of all plastic ever produced has been recycled. About 12% has been incinerated. The other 79% has accumulated in landfill, dumps and the natural environment, where it often ends up washing into rivers via wastewater, rain and floods. Much of it eventually ends up in the ocean .”*

The Guardian, December 29, 2020

# Pyrolysis to Biofuel; Need for Local Processing of Plastic Waste

**Positive Environmental Outcomes**

- Lower carbon footprint than incineration
- Partial sequestration of carbon in biochar by-product
- 100% local processing of plastic waste helps prevent ocean plastic waste pollution
  - A portion of plastic waste sent to foreign countries is not recycled, and ends up in open dumping sites, waterways, and oceans

**Open Dumping Site - Indonesia**

# Pilot Facility; Plastic Waste

- Inclusion of a small percentage of plastic waste to be considered for pilot purposes
- Plastic waste disposal is a “hot button” environmental issue in the U.S. due to the China import ban
- In many areas, plastic waste is now being sent to incinerators and landfills, with tipping fees payable
- Pilot project could pay municipalities a fee per ton of segregated plastic waste

# Next Steps

- Confirm in-principle interest
- Execute Non-Binding Letter of Intent as a basis for Waste Processing Agreement
- Waste Processing Agreement finalized
- Commencement of construction, with commercial operation in early 2023

**Office Contact**
NextGen Energy
Level 28, Gateway East
152 Beach Road
Singapore 189721

**For more information, please contact:**

**Joe Anderson**
**Chairman**
E-mail: janderson@energynextgen.com