



**150 MW ADVANCED
TIRE-TO-ENERGY
FACILITY IN
PUERTO RICO**

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EXECUTIVE SUMMARY





Puerto Rico generates over 4 million waste tires annually, leading to illegal dumping, environmental degradation, and serious health risks. Geodyn Solutions proposes a 150 MW hybrid renewable energy facility that converts these tires into clean, baseload electricity through advanced pyrolysis systems, Heat Recovery Steam Generators (HRSG), and Organic Rankine Cycle (ORC) units. The project will produce electricity at \$0.19/kWh, eliminate tire waste, reduce emissions, create long-term jobs, and return over 460% ROI within 12 years. A 25% incidental expense reserve is included to account for inflation, logistics risks, regulatory requirements, and other unforeseen costs—ensuring financial sustainability and execution certainty.

PROJECT GOALS



Build a 150 MW tire-to-energy plant utilizing pyrolysis, HRSG, and ORC technologies.

Divert over 4 million tires per year from Puerto Rican landfills and illegal dumps.

Generate revenue from:

- Electricity sales
- Carbon credits
- Tipping fees
- Recovered steel and carbon black

Include a 25% cost buffer for unforeseen expenses to ensure financial durability.

Create long-term green jobs and support the island's clean energy transition.



PUERTO RICO'S TIRE WASTE CHALLENGE

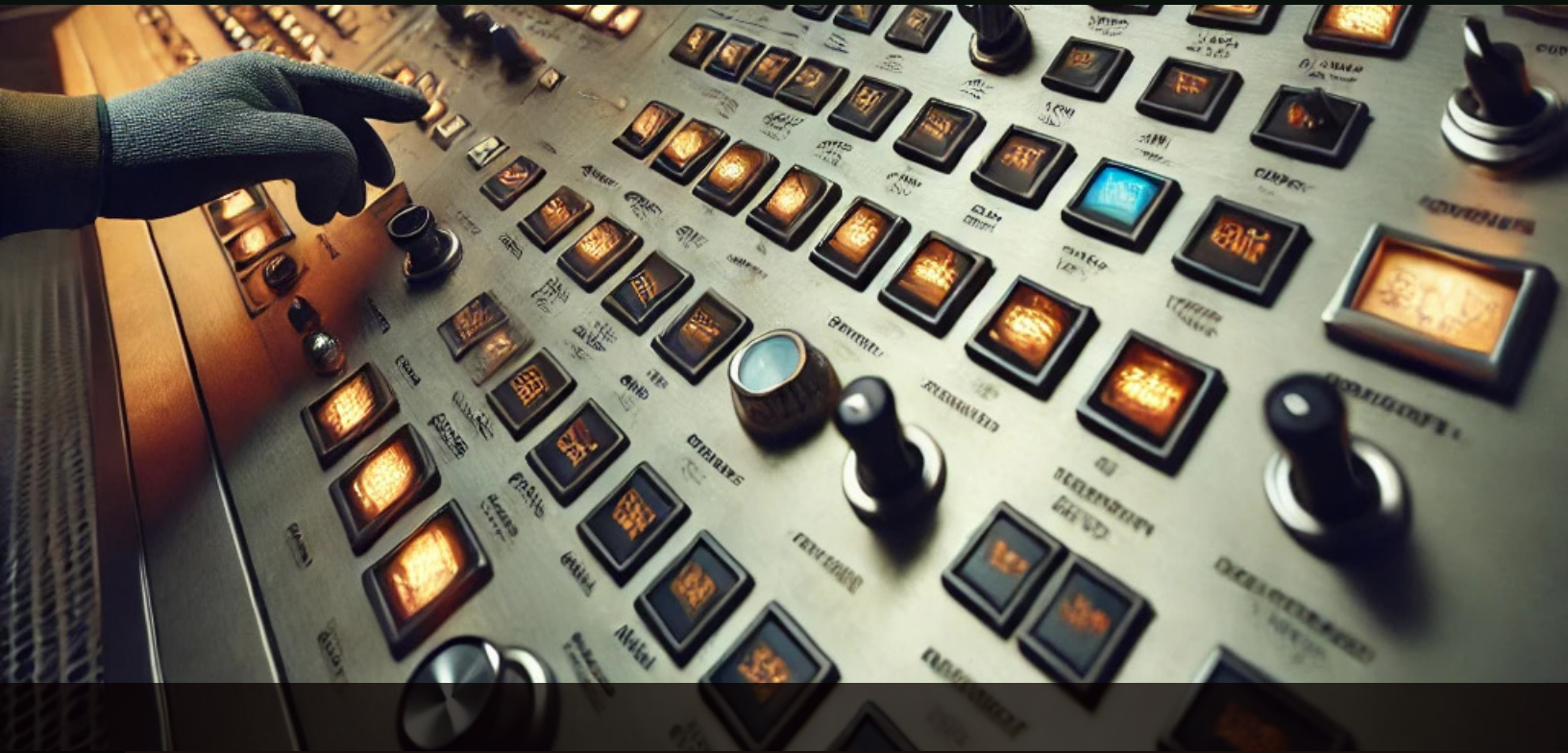
4M+ scrap tires/year generated with inadequate recycling capacity.

Dumped tires cause:

- Mosquito breeding grounds (Zika, dengue, chikungunya)
- Tire fires and air pollution
- Leaching of heavy metals and hydrocarbons into soil and groundwater

Existing programs are reactive and unsustainable—this solution is permanent and revenue-generating.

TECHNICAL SOLUTION



TIRE PYROLYSIS

Converts shredded tires into:

- Pyrolysis oil (used as fuel for turbines)
- Syngas (used in gas turbines)
- Recovered steel and carbon black for resale

HYBRID POWER SYSTEM

- Gas Turbines: Powered by pyrolysis-derived fuels.
- HRSG: Captures heat from turbines to generate steam.
- ORC Unit: Converts low-temperature residual heat into additional electricity.
- System Output: 150 MW net generation capacity.
- Efficiency: 35–40% thermal-to-electric conversion.

SITE & INFRASTRUCTURE REQUIREMENTS



Land Requirement: 50–60 acres

Estimated Land Cost: \$3M–\$5M (based on location)

Facility Includes:

- Pyrolysis & processing lines
- Gas turbine and HRSG plant
- ORC system
- Material recovery and logistics area
- Green buffer zones for environmental compliance

CAPEX, INCIDENTAL COSTS & OPEX

LAND & PERMITTING

\$5M

Tire Processing & Pyrolysis Units

\$120M

Gas Turbines & HRSG

\$250M

ORC & Heat Recovery Systems

\$80M

Grid Interconnection & Batteries

\$40M

Base CAPEX

\$495M

25% Incidental Expense Reserve

\$124M

Total Project Allocation

~\$619M

Annual OPEX:

- Operations & Labor: \$10M
- Maintenance & QA: \$12M
- Logistics & Fuel Supply: \$5M
- Compliance & Overhead: \$5M
- Total OPEX: ~\$32M/year



ANNUAL REVENUE STREAMS

Source	Details	Revenue
Electricity Sales	$150 \text{ MW} \times 8,000 \text{ hrs} \times \$0.19/\text{kWh}$	~\$228M/year
Tipping Fees	$300,000 \text{ tons} \times \$70/\text{ton}$	~\$21M/year
Carbon Credits	$400,000 \text{ tCO}_2\text{e} \times \$30/\text{ton}$	~\$12M/year
Material Recovery	Steel, carbon black, ash	~\$3M/year
Total Annual Revenue		~\$264M/year



FINANCIAL PERFORMANCE & ROI (12-YEAR PROJECTION)

Metric	Value
Total Project Allocation	~\$619M
Average Annual Net Income	~\$232M
Payback Period	~2.7 years
12-Year Net Income	~\$2.78B (before tax)
12-Year ROI	>460%

Note:

Excludes upside from energy price increases, carbon credit inflation, or further efficiency gains.



ENVIRONMENTAL IMPACT

- Diverts over **4 million tires per year** from landfills and illegal dumps.
- Reduces GHG emissions by **400,000 tons CO₂e/year**.
- Prevents tire fires and soil/water contamination.
- Reduces disease vectors caused by stagnant water in tire piles.
- Advances Puerto Rico's goals for **resilient infrastructure, waste reduction**, and **carbon neutrality**.



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ECONOMIC & SOCIAL BENEFITS

Category	Estimated Jobs
Tire Collection/Logistics	150
Facility Operations	100
Maintenance/QA	60
Administration/Compliance	30
Local Supply Chain Impact	300+
Total Jobs Created	~640+

- Strong economic stimulus in rural or industrial zones.
- Potential for workforce training and technical partnerships with universities.

GOVERNMENT INCENTIVES & CARBON CREDITS



ELIGIBLE FOR

- IRA Clean Energy Tax Credits (USA)
- DOE Waste-to-Energy Grants
- FEMA Resilience and Recovery Funds
- Carbon Offset Programs (Verra, Gold Standard, or CORSIA)

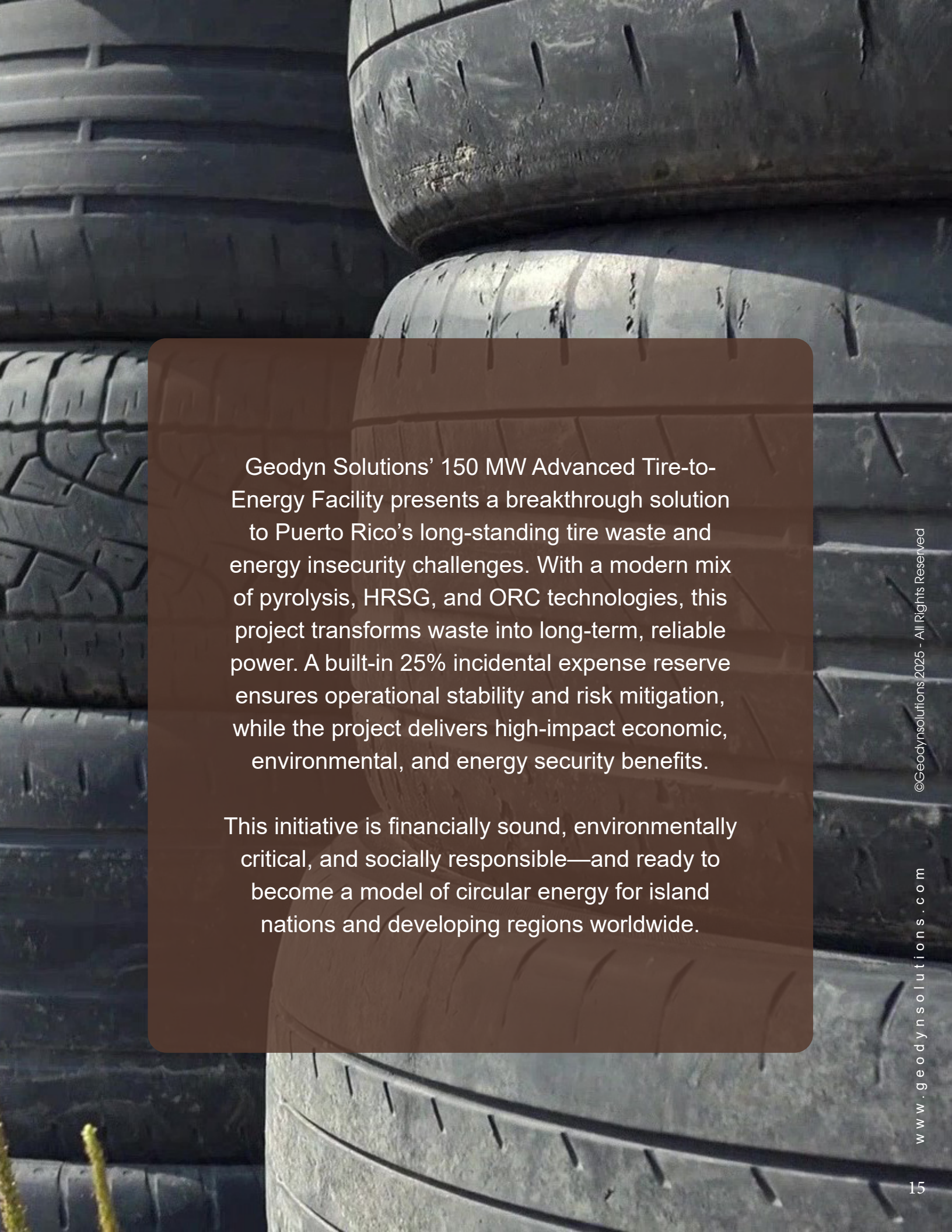
POTENTIAL FOR LONG-TERM

Power Purchase Agreements (PPAs) with PREPA or private off-takers.



IMPLEMENTATION TIMELINE

Phase	Duration
Permitting & Feasibility	6–9 months
Engineering & Procurement	9–12 months
Construction & Commissioning	18–24 months
Commercial Operation	Year 3
ROI Achieved	Year 12



Geodyn Solutions' 150 MW Advanced Tire-to-Energy Facility presents a breakthrough solution to Puerto Rico's long-standing tire waste and energy insecurity challenges. With a modern mix of pyrolysis, HRSG, and ORC technologies, this project transforms waste into long-term, reliable power. A built-in 25% incidental expense reserve ensures operational stability and risk mitigation, while the project delivers high-impact economic, environmental, and energy security benefits.

This initiative is financially sound, environmentally critical, and socially responsible—and ready to become a model of circular energy for island nations and developing regions worldwide.



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