



Solid Waste & Recycling (SWR) Programs & Projects

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Solid Waste & Recycling (SWR) Related Programs & Potential Projects

- 1) SB 1383 – Mandatory Organics Recovery
- 2) Biomass (Woody Waste) Gasification System
- 3) Anaerobic Digestion (AD) to Renewable Natural Gas (RNG) System



SB 1383 Mandatory Organics Recovery

- State law establishing methane reduction targets for “Short-lived Climate Pollutants”
- Achieve 75% reduction in disposal of organic waste by 2025 (vs.2014)
- Collect, capture and recover recyclable materials and compostable organics for ALL generators (residential, commercial, multi- family, schools, institutional, etc.)
- Most aggressive and far-reaching solid waste/recycling legislation in 30 years



Status Snapshot vs. SB 1383

Provide compostable organic waste collection to all residents & businesses

Note: December 2021 vs March 2023

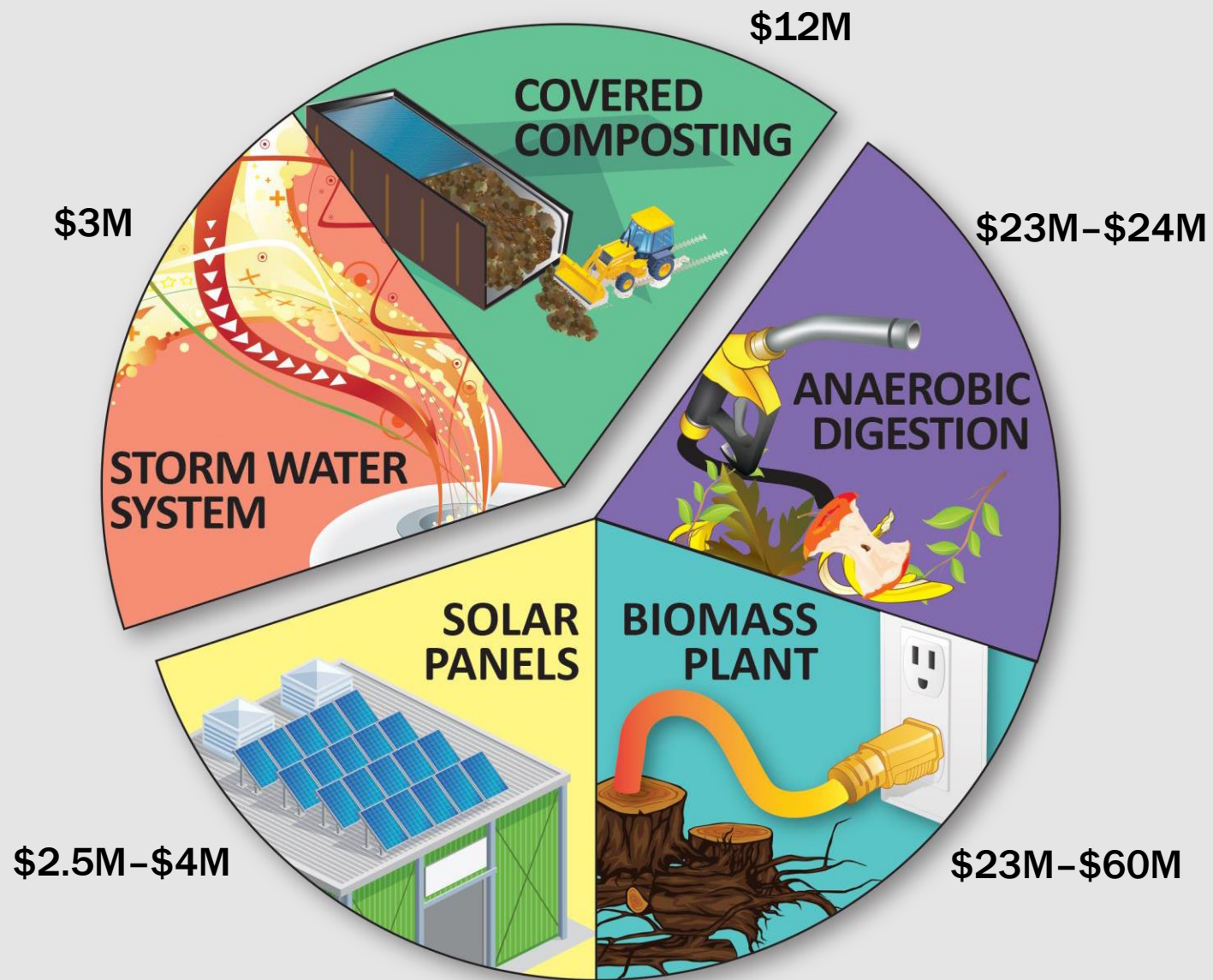
- **Residential** = 21,400 of 22,500 accounts full composting/recycling service
 - (95% compliant, now approximately 98% compliant; 100% by year-end)
- **Commercial/Schools** = 400 of 1200 accounts have full spectrum composting service, including food scraps & soiled paper in addition to yard trimmings
 - (33% compliant, now approximately 50% compliant; 100% by end of CY2024)
- **Multi-family (5 units or more)** = 8 of 125 accounts have full spectrum composting service, with food scraps & soiled paper
 - (6% compliant, now approximately 10% compliant; 100% by CY2027)



Why is SB 1383 Important?

- City of Napa passed a “Disposal Reduction Policy” in 2012 setting a policy goal of 75% (or more) diversion from landfill disposal
- City achieved 69% diversion in 2017; Dropped to 63% diversion in 2022
- If successful, SB 1383 implementation will improve overall diversion by 8-12%, with vast majority of improvement coming from recovery of compostable organics, which have high climate change impacts





Stormwater System Improvements and a Covered Composting System were necessary upgrades at the MDF to comply with facility permits and regulations

Anaerobic Digestion, Biomass Plant and Solar Panels represent local and sustainable renewable energy opportunities (but not requirements).

Overview of Napa Renewable Resources Project Elements



Biomass Gasification Technology

- Local solution to statewide “Biomass Crisis”
- Napa MDF shipped out 8000 tons in CY2022
 - If high carbon “compost overs” added, jumps to 30k tons/yr
 - Wood from mixed construction and demolition (C&D) debris at adjacent transfer station adds another 7-9 tons/yr
- Existing biomass plants closing with remaining capacity for “urban” wood waste crowded out by forest waste from dead and drying trees

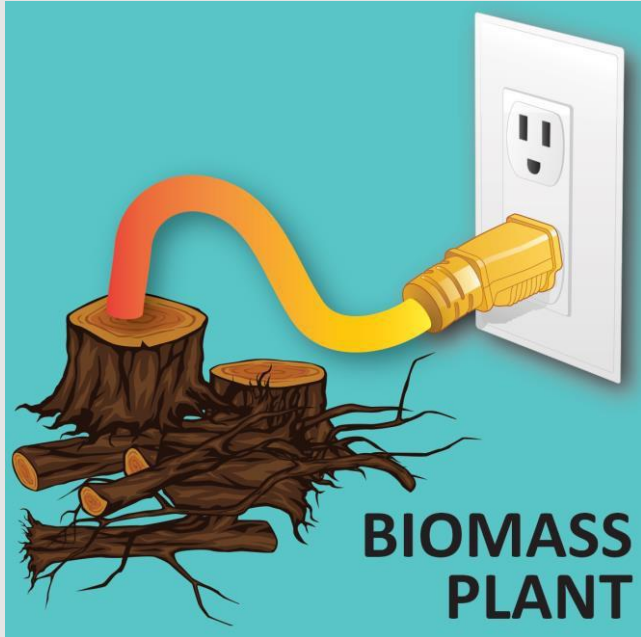


Biomass Gasification Technology



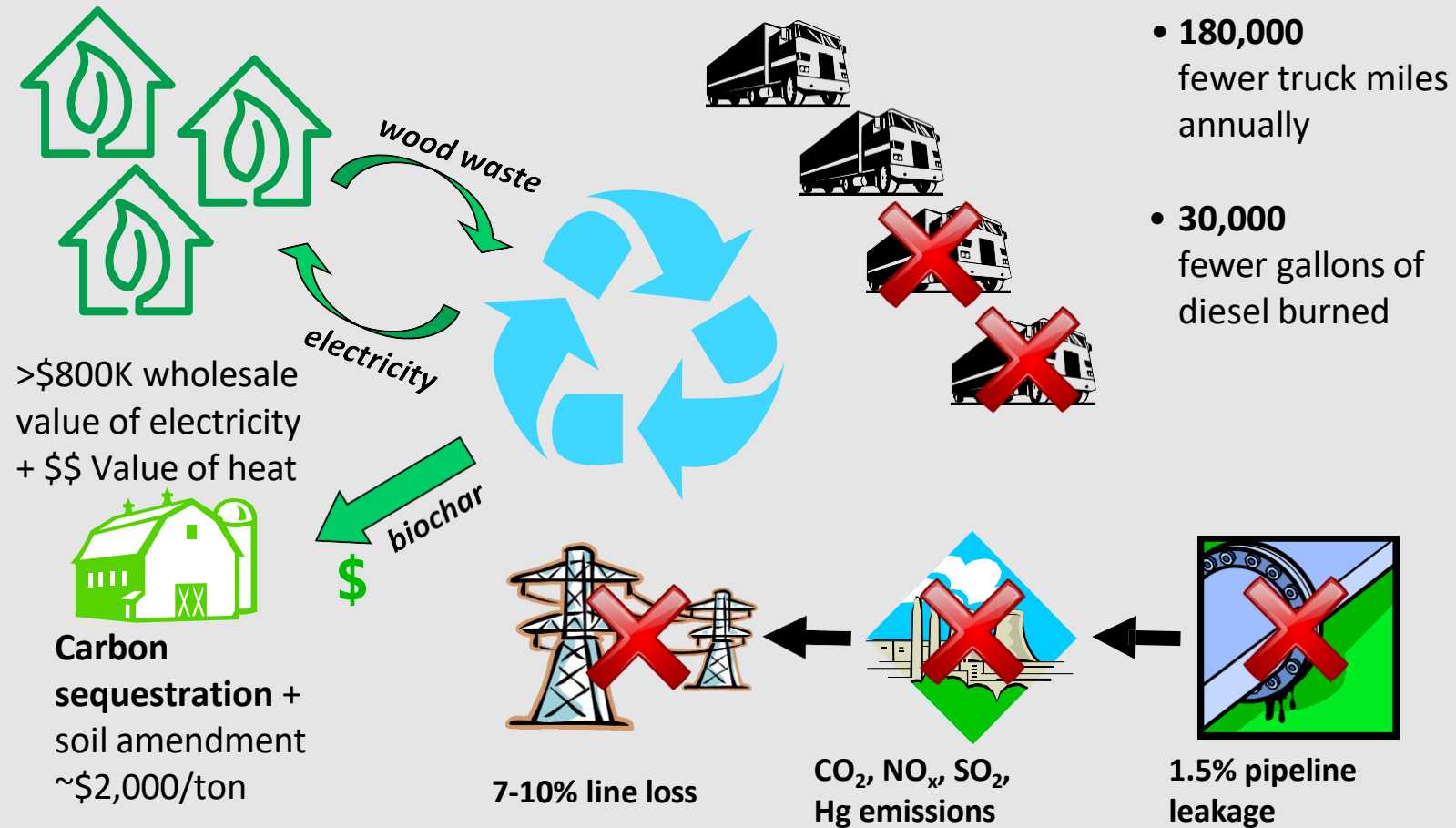
Image of a 1 MW Biomass Plant Unit
(source: Phoenix Energy)

Biomass Gasification Technology



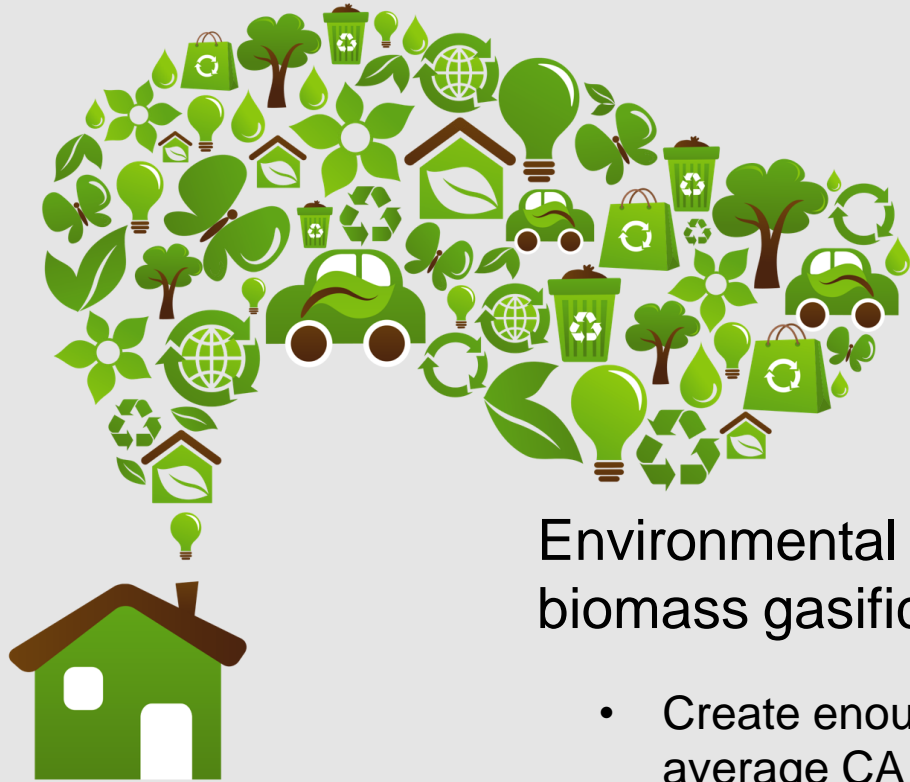
- Biomass Gasification converts wood & high carbon yard trimmings into a “Syngas” for power generation
- Wood-chips reduced by 85%-95% into a solid byproduct called “Bio Char” that can be sold as a valuable soil amendment or water filtering medium

Biomass Gasification Technology



**figures based on information provided by Phoenix Energy for 1MW unit from actual customer data*

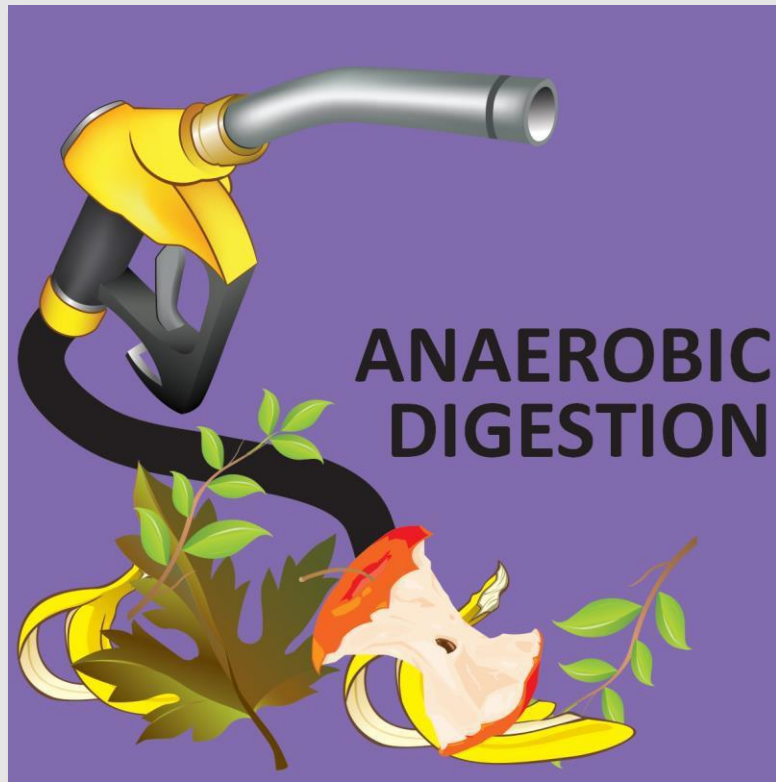
Biomass Gasification Technology



Environmental benefits of a 3-MegaWatt (MW) biomass gasification system at Napa MDF:

- Create enough renewable energy annually to power 3,368 average CA households/year
- “Carbon negative” biomass gasification technology, added to carbon sequestration benefits of biochar and combined with elimination of 1400 out-of-county truck trips each year, is the equivalent of taking 900 passenger cars off the road annually for 20 years

Anaerobic Digestion (AD) Overview



- This “air-less” technology ferments a mix of wet & dry plant/food matter to create and capture biomethane or “biogas”
- The organic by- product (digestate) goes through a short “in-vessel” system to become a finished compost product

Non-financial benefits of AD

- **Clean Air** = 100% clean air “carbon-negative” vehicle fuel (certified by CARB at -165.05 gCO₂/MJ) for refuse & recycling fleet not vulnerable to market price fluctuations.
- **Sustainable** = A true “Closed Loop” sustainable collection infrastructure (with collected organics serving as the feedstock to provide fuel for vehicles ... “fork to fuel”).
- **Best Available Technology** = Deployment of the best available technology for air emission control, odor reduction and stormwater management (City avoids having to “reinvest” again in 10-15 years because of more stringent regulations).



Non-financial benefits of AD

- **Sustainability Fulfillment** = Significant fulfillment of both City facility and community-wide sustainability & Climate Action/GHG reduction plans.
- **Local Renewable** = Provides locally available and renewable source of biofuel not dependent on “fracking” extraction for natural gas. Can be converted to produce electricity in future if refuse & recycling fleet transitions to an electric fleet by 2035.
- **Community Scale** = Use of a commercially proven, community scale technology to serve as a model for other communities.



...and the Bonus!

- At full capacity, the Napa AD to biofuel system would prevent **100,806** metric tons of CO₂ from being released over 10 years
- This is the equivalent of taking **21,222** passenger vehicles off the road (per EPA & CARB metrics)



Status and next steps

- **SB 1383** = SB 1383 Contract Amendment with Napa Recycling & Waste Services (NRWS) approved by City. Added 6.5 NRWS employees & \$4.5M in new collection/processing equipment (\$1.5M via grant)
- **Biomass Gasification** = Purchase offer made for new property; City selecting CEQA firm for Biomass Gasification project; NRWS to select technology vendor, explore impact of Investment Tax Credit (ITC) from Federal Inflation Reduction Act and submit proposal to City by October 2023
- **AD to Renewable Biofuel** = \$10M grant submitted by the City of Napa to CalRecycle (awards announced in Oct 2023); NRWS to investigate ITC impact & submit proposal (grant or no grant) to City by Oct 23

