



The Southern California Conversion Technology Demonstration Project

Regulatory and Legislative Barriers to Effective Utilization of California's Abundant Biomass Resources

**Presentation to the 2009
California Biomass Collaborative
Annual Forum**



Outline

- Environmental Challenges Facing California
- Conversion Technologies as a Potential Solution
- Los Angeles County's Approach
- Barriers to Moving Forward
- Conclusion



Current Solid Waste Management in L.A. County

2007 MSW Disposal Quantities (All Jurisdictions in L.A. County)

<u>Los Angeles County</u>	<u>Tons/Year</u>	<u>Tons/Day</u>	<u>% of Total</u>
In-County Landfills	8.9 Million	28,500	78%
Waste-to-Energy Facilities	0.5 Million	1,700	5%
Exports to Out-of-County Landfills	2.0 Million	6,400	17%
Total Disposed	11.4 Million	36,600	

- Currently sending over 11 million tons of waste to disposal every year (after all waste reduction and recycling programs are implemented)
 - Equivalent to filling the Rose Bowl **32** times
 - Disposal has remained steady or risen since 1990 despite recycling programs, due to population and economic growth



Future of Solid Waste Management in L.A. County

- Puente Hills Landfill is scheduled to close in 2013:
 - Currently accepts about 1/3 of the County's total waste stream (13,000 tons/day)
 - Additionally processes nearly 1/2 of all greenwaste generated in the County
 - Greenwaste is used as ADC, which accounts for many jurisdictions reaching 50% waste reduction mandate
- The proposed Waste to Rail System is only permitted to export *up to* 8,000 tons/day
 - Not enough to offset the closure of PHL
 - Facing serious hurdles for implementation
- Exports are expected to rise from 20% to 45% (best case scenario) or **80%** (WCS) by 2020
- Climate change/global warming have imposed additional burdens and public scrutiny on solid waste facilities



Solid Waste Regulations

- New advances in solid waste management have led to stringent regulations, including:
 - landfill liner systems
 - post-closure maintenance
 - traffic mitigation
 - odor reduction
 - operating restrictions
- Public is more aware and involved, impacting time and effort needed for development, expansion, and even routine re-permitting of solid waste facilities.



Environmental Considerations

Climate change/global warming have imposed additional burdens and public scrutiny on solid waste facilities.

Table ES-2: Recent Trends in U.S. Greenhouse Gas Emissions and Sinks (Tg CO₂ Eq.)

Gas/Source	1990	1995	2000	2001	2002	2003	2004	2005
CH ₄	609.1	598.7	563.7	547.7	549.7	549.2	540.3	539.3
Landfills	161.0	157.1	131.9	127.6	130.4	134.9	132.1	132.0
Enteric Fermentation	115.7	120.6	113.5	112.5	112.6	113.0	110.5	112.1
Natural Gas Systems	124.5	128.1	126.6	125.4	125.0	123.7	119.0	111.1
Coal Mining	81.9	66.5	55.9	55.5	52.0	52.1	54.5	52.4
Manure Management	30.9	35.1	38.7	40.1	41.1	40.5	39.7	41.3
Petroleum Systems	34.4	31.1	27.8	27.4	26.8	25.8	25.4	28.5
Wastewater Treatment	24.8	25.1	26.4	25.9	25.8	25.6	25.7	25.4



Conversion Technologies: A Potential Solution

- Conversion technologies are an array of emerging processes capable of converting post-recycling residual solid waste into useful products and chemicals, green fuels like ethanol and biodiesel, and clean, renewable energy
- These technologies may be thermal, chemical or biological, but are not incinerators – there's *no combustion* of the waste
- Conversion technologies are successfully used to manage MSW throughout Europe and Japan, but commercial developments in the U.S. are still in design stage

Sample Conversion Technologies

Facilities vary technology to technology, feedstock to feedstock and vendor to vendor. No two are alike.



Some images reprinted from CIWMB staff presentation, December 2001,
and from City of Los Angeles' RENEW LA Plan, July 2005



Benefits of Conversion Technologies

- Ability to manage residual MSW, and reduce dependence on landfills and waste exporting
- Locally produce renewable energy and green fuels, including ethanol, biodiesel, & electricity
- Promote energy independence from foreign oil
- Create export-proof environmental sector jobs
- Reduce emissions, including GHG emissions, by reducing disposal, transportation, and fossil fuel usage
- ***Turn a liability (solid waste) into a valuable resource***



Conversion Technologies and CA's Environmental Initiatives

- Conversion Technologies can also help California achieve a number of Statewide environmental goals, including:
 - AB 32 / Climate Change
 - Renewable Portfolio Standard
 - Alternative Fuels/Low Carbon Fuel Standard
 - Bioenergy Action Plan Goals
 - Energy Security/Independence
 - Hydrogen Highway
 - AB 939 / Solid Waste Disposal Capacity and Landfill Reduction

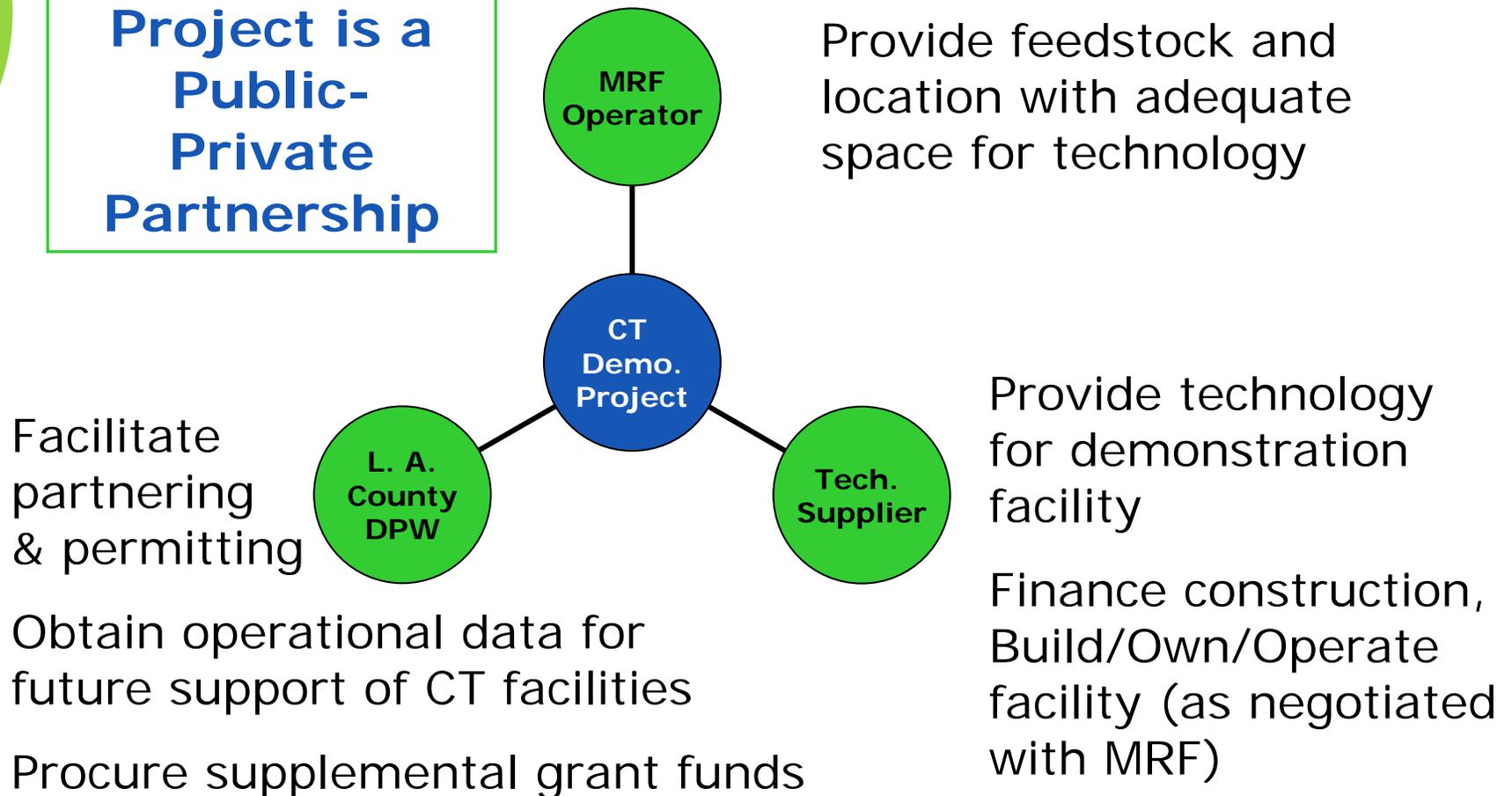


Southern California Demonstration Project

- The Southern California Conversion Technology Demonstration Project would create a ripple of regional benefits:
 - Concrete performance data for various technologies with respect to emissions, byproducts and marketability of products
 - A rigorous analysis of the **technical, economic** and **environmental** feasibility of these technologies
 - A permitting pathway and clear market signals for the private sector
 - Impetus for development of conversion technologies throughout the region

Southern California Demonstration Project

**Project is a
Public-
Private
Partnership**





Obstacles for Development

● Cost

- Most new CT plants have a large start up cost
- Landfill disposal is (currently) relatively cheap

● Misconceptions

- Perception of CT as similar to incineration
- Perception that facilities will emit high levels of toxic emissions (esp. dioxins/furans)

● Regulatory Hurdles

- Currently only incineration or composting technologies are clearly defined
- CTs are transitional technologies and have no clear permitting or regulatory pathway



Terminology

- How to decipher for lay people:
 - Transformation, biomass conversion, waste to energy, advanced thermal recycling, conversion technology, biorefineries, alternative technologies, etc.
 - Pyrolysis, gasification, acid hydrolysis, anaerobic digestion, thermal depolymerization, fermentation, plasma arc, etc.



Legislative Action



- Since 2000, several proposals have been introduced in the State Legislature to assist the development of conversion technologies and clarify terminology, with **no success**
- The State Waste Board had to retract a report due to political pressure
- AB 1090 died in Committee in 2006, despite overwhelming support and over 100 attendees at a special hearing in downtown Los Angeles
- Committee staff is currently attempting to sabotage AB 222 (Adams, Ma), with recent hostile amendments turning the bill on its head



Conclusion

- Conversion Technologies can revolutionize how we manage our waste: stretching landfill capacity, reducing GHG emissions, generating valuable products, renewable electricity and green fuels, and leading to a less polluted, more sustainable world
- If local efforts are successful, California can maintain a leadership role in the development of advanced technologies
- It's important for scientists, politicians, policy makers, environmentalists, and industry to continue collaborating to reshape the new era of resource management



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For more info and copies of the
County's Evaluation Report, visit:

www.SoCalConversion.org

-  Sign up for future updates, including data and findings from our demonstration project, on our **e-Notify system**, linked from the website above.