September 9, 2015 – BACWA AIR

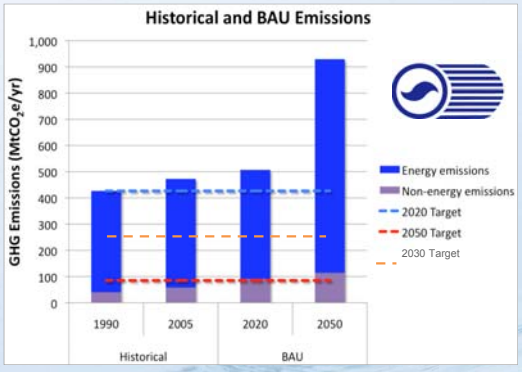
Air Regulatory Update: California Wastewater Climate Change Group (CWCCG)

Last year we were tracking…

- Air:
  - AB 32 – Global Warming Solutions Act
    - Scoping Plan Update
    - GHG Mandatory Reporting
    - Cap-and-Trade Program
  - EPA PSD and Title V GHG Tailoring Rule & Deferral Rule
- Energy:
  - SB 1122 – Bioenergy Projects
  - AB 1900 – Pipeline Biomethane
- Solids:
  - AB 341 – Waste Diversion
- Adaptation
  - CNRA Fourth CA Climate Change Assessment
  - CEC and CAT Climate Change Research Plan

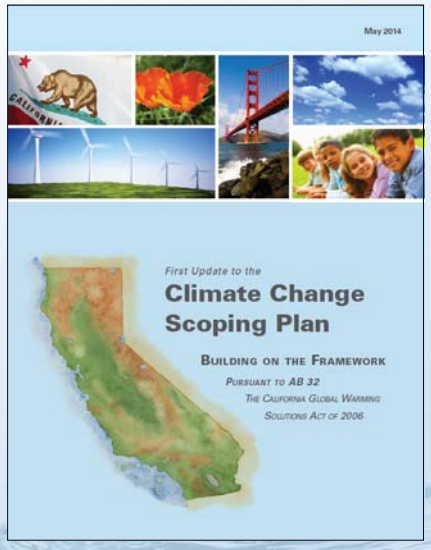
Assembly Bill 32 (AB 32) is driving the state to reduce greenhouse gases (GHGs)

- First Act in U.S. regulating GHGs
- Enforced by the California Air Resources Board (ARB)
- Set targets for future statewide GHG emissions levels:



- 2020: 1990 levels
- 2030: 40% below 1990 levels
- 2050: 80% below 1990 levels

AB 32 Climate Change Scoping Plan outlines key strategies for reducing GHGs



- CA's climate change priorities for next 5 years
- Progress toward meeting 2020 goals
- 9 economic sectors for setting long term (2050) goals:
  - transportation, energy, water, waste management, agriculture, natural and working lands, short-lived climate pollutants, green buildings, and cap-and-trade

CWCCG members ranked AB 32 Scoping Plan goals relevant to POTWs

AB 32 Economic Sectors and Post-2020 Goals Relevant to POTWs	Priority		
	High	Medium	Low
By 2015, develop incentives for resource-recovery wastewater treatment projects	11		
By 2016, modify state and regional water board policies and permits to achieve conservation, water recycling, stormwater reuse, and wastewater-to-energy goals	10	1	
Funding/incentivizing in-state infrastructure: Cap-and-Trade Investment Plan Loan, grant, and payment programs LCFS pathways (anaerobic digestion at POTWs) CPUC proceedings (e.g., biogas from anaerobic digestion and Renewable Market Adjusting Tariff) Offset protocols recycling, composting, anaerobic digestion)	10	1	
CPUC and CEC streamlining process to develop a low-cost interconnection process for distributed generation by 2015	7	2	2
Identifying/recommending actions to address cross-CA agency and federal permitting and siting challenges associated with composting and anaerobic digestion	4	6	1
Develop a plan for a post-2020 Cap-and-Trade program	4	5	2
Eventually eliminate disposal of organic materials to landfills with compliance actions in 2016	5	2	4
Developing a strategy for mitigating SLCPs by 2015 (including methane)	4	4	3
Reducing emissions of smog-forming pollutants (VOCs, NOx, CO) to ~90 percent below 2010 levels by 2032 to meet the National Ambient Air Quality Standards for ozone	4	4	3
Bioenergy Interagency Working Group implementing actions in the Bioenergy Action Plan in 2015 to promote input of (dairy) digester biogas into natural gas pipelines and bioenergy onto the electric grid – may be an avenue for getting wastewater digester gas in the Plan as well.	3	5	3
By 2016, implement green infrastructure permits to treat and capture urban runoff for local use	2	6	3
Leverage public money to scale-up clean technology markets and ensure infrastructure investments: AB 118 Air Quality Improvement Program AB 118 Alternative and Renewable Fuel and Vehicle Technology Program Cap-and-Trade auction proceeds	1	7	3

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The "Top 3" priority Scoping Plan goals are:

Water

- By 2015, develop incentives for resource-recovery wastewater treatment projects
- By 2016, modify state and regional water board policies and permits to achieve conservation, water recycling, stormwater reuse, and wastewater-to-energy goals

Waste

- Funding/incentivizing in-state infrastructure:
  - Cap-and-Trade Investment Plan
  - Loan, grant, and payment programs
  - Low Carbon Fuel Standard (mesophilic digestion at POTWs)
  - CPUC proceedings (e.g., biogas from anaerobic digestion and Renewable Market Adjusting Tariff)
  - Offset protocols (recycling, composting, anaerobic digestion)

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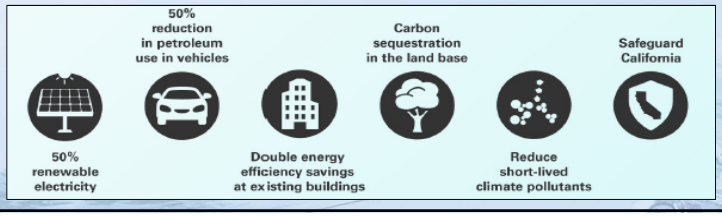
POTWs can contribute toward the statewide 2020 targets set under AB 32

- ⬇ GHGs (1990 levels)
- ⬆ Renewable energy (33%)
- ⬇ Carbon intensity of fuel (10%)
- ⬇ Waste to landfill (75%)

Governor announced 2030 targets to achieve GHG levels 40% below 1990 levels

- Increase electricity derived from renewable sources from 33% to 50%
- Reduce petroleum use in cars and trucks by up to 50%
- Double efficiency of existing buildings and make heating fuels cleaner
- Increase carbon sequestration on farms and rangelands, and in forests and wetlands
- Reduce release of short-lived climate pollutants, such as methane and black carbon



CA state agencies' PATHWAYS project: Long-term GHG Reduction Scenarios

- CARB, CEC, CPUC, and CAISO evaluating the feasibility and cost of meeting 2030 and 2050 targets
- Hired Energy + Environmental Economics (E3) with support from Lawrence Berkeley National Laboratory (LBNL)
- E3 California PATHWAYS model features
  - Buildings
  - Industry
  - Transportation
  - Electricity
  - Non-energy GHG emissions (water and agriculture) with less detail
- Goal: Decarbonize CA's Economy

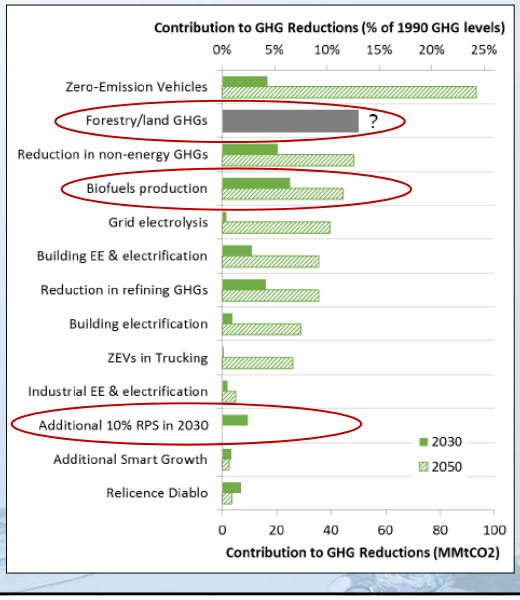
To achieve reduction targets, the model scenarios (by 2030) included:

- Doubling **energy efficiency** in buildings & industry
- **Low-carbon electricity** development (50-60% renewable)
- Over 50% new residential **water heaters and building HVAC systems** be high efficiency OR replace 50% natural gas demand with biogas
- **Zero emission and hybrid vehicles** (3-8 million)
- **Decarbonize liquid or gas fossil fuels** with sustainable biofuels (i.e., biogas or biomass derived)
  - 4 billion gallons of renewable diesel or gasoline OR
  - >50% of natural gas demand met with biogas
- **Reducing non-energy GHGs** (methane leaks & F-gases) – assumes no net emissions from forests & working lands

Model shows reduction of 26-38% below 1990 levels by 2030

Biogas serves 53% of natural gas demand from buildings & industry

Biomass serves 24% of liquid fuels for transport

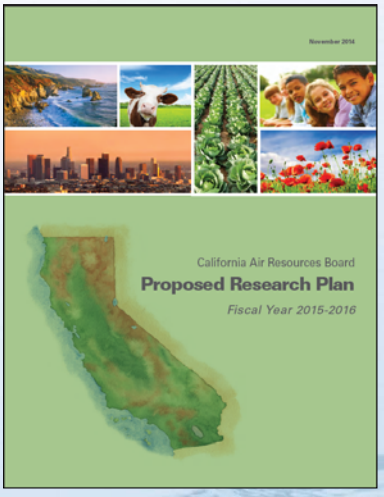


POTWs estimate GHGs, but have not been a target for reducing GHGs

- CA GHG regulations in place
  - Mandatory reporting
    - Stationary combustion units
    - Electricity generating units
    - Threshold: 10,000 metric tons carbon dioxide equivalent emissions per calendar year
  - Cap-and-trade
    - Threshold: 25,000 metric tons fossil fuel based carbon dioxide equivalent emissions per calendar year
    - Pay for allowances to emit
    - Gradual decrease in allowances over time

However, ARB and BAAQMD are looking beyond stationary combustion…

Proposed research to help further understand and reduce GHG levels



- ~$6.5M in projects to be allocated across 6 categories:
  - Economic Assessment (5%)
  - Atmospheric Science (9%)
  - Sustainable Communities (13%)
  - Health & Exposure (14%)
  - **Short-Lived Climate Pollutants (SLCPs) and N_2O (17%)**
  - Transportation (42%)

Proposed Research for FY 2015-16: Add'l & Uncertain N_2O Emission Sources

- $400k study over 30 months
- Goal: Develop N_2O emissions estimates and/or emission factors for landfills, golf courses, and POTWs
- CWCCG and CASA met with ARB staff and provided:
  - Information on typical CA solids management strategies
  - Assistance on developing and delivering a survey to better characterize liquids treatment across CA

We need your help responding to the survey!

CALIFORNIA NITROGEN ASSESSMENT

Agricultural Sustainability Institute at UC Davis
UC Sustainable Agriculture Research and Education Program

- Goal: Define role of N in the global food supply (focus is CA)
- Study looks at drivers, mass balance, practices/ technologies, policies, etc.
- Pros
  - "Municipal wastewater management can play a critical role in the nitrogen cycle"
  - Land applying biosolids is an "important opportunity for recycling organic N back to soil systems."
- Cons
  - References only one study on N_2O process emissions
  - 1990 census data to estimate WWTP and septic tank N impacts
  - coordination with ARB efforts yet, but is planned

Healthy Soils Initiative…to increase carbon in CA agricultural lands

- Producing benefits for: water retention, soil stability, nutrient use efficiency, and GHG reductions
- CDFA to establish long term goals

http://www.cdfa.ca.gov/EnvironmentalStewardship/HealthySoils.html

Strategies to secure and enhance carbon storage on Natural and Working Lands

- Includes CA farms, rangelands, forests and wetlands
- Aug 5th Symposium topics included:
  - Protecting and managing land to minimize GHG emissions and increase carbon sequestration rates
  - Opportunities to develop synergies that promote resource stewardship and contribute to GHG emission reductions in other sectors

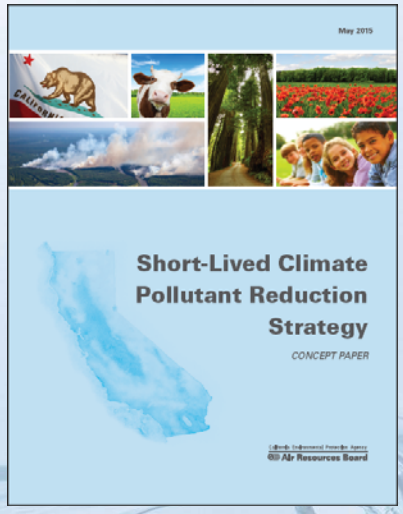
No mention of POTW biosolids at the Symposium!

WERF Project: High Quality Biosolids from Wastewater

- Goal:
  - *Expand biosolids use nation-wide by defining standards & specifications needed to cost-effectively produce & market high quality, safe, stable biosolids across the country, and identify benefits for both the generator and the end user*
- Led by Material Matters Inc.
- Current activities:
  - Define what “high quality” means
  - Identify sustainability criteria for biosolids quality
  - Survey selected utilities on how their solids are processed and managed (end of life)

Short-Lived Climate Pollutant Reduction Strategy - POTWs part of the solution!!

- Requires SLCP reduction:
  - methane, black carbon, tropospheric ozone, etc.
- Implementation Strategy to be developed from this and adopted Spring 2016 http://www.arb.ca.gov/cc/shortlived/shortlived.htm



Good news for POTWs in the SLCP Reduction Strategy…

- "Putting Organic Waste to its Most Beneficial Use" highlights organic material from wastewater treatment
- ARB states wastewater contributes a "small amount" (4%)
- "Minimize Fugitive Methane Emissions from all Infrastructure and Equipment" suggests increasing capture and use of biogas at POTWs
- "Maximize Resource Recovery from Wastewater Treatment Facilities" states it will work with the SWRCB to identify ways to:
  - Increase the role POTWs can play in reducing SLCPs
  - Expand its role in diverting organic waste and putting it to beneficial use
  - Focus not only on water quality, but also maximize resource recovery from a wide array of waste streams and potential end products

Bay Area AQMD (BAAQMD) Board wants to see GHG reductions from POTWs

- BAAQMD Board wants to move faster on POTW related issues than ARB:
  - Develop a baseline (with fugitive and process GHG emissions)
  - Identify which sources to reduce first
  - Discuss digester gas production "limit"
- CWCCG and Bay Area Clean Water Agencies Air Issues and Regulations Committee met with BAAQMD staff:
  - Provided background on POTWs for new staff and state regulations and legislation (cross media issues)
  - BAAQMD wants to continue collaborating with us and begin coordinating with ARB staff
  - BAAQMD is very interested in land application of biosolids for the agriculture sector

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

CO_2 emissions related to bioenergy and other biogenic sources

- 2nd revision to framework for assessing biogenic CO_2 emissions from stationary sources November 2014
  - Peer review by Scientific Advisory Board (SAB)
  - Asst Administrator Janet McCabe issued memo to EPA's Regional Air Division Directors stating:

    "…waste-derived feedstocks will likely have minimal or no net atmospheric contributions of biogenic CO_2 emissions…"
- However…
  - RTI approach contains questionable assumptions serving as the basis for POTW accounting mechanism
  - June 2015 – Obama administration objects to forest biomass being represented as categorically carbon-neutral
  - July-Sept 2015 – SAB members unsatisfied with parts of the framework and new approaches are being considered
- CWCCG to discuss with NACWA and decide how to proceed

President Obama's Climate Action Plan: EPA's Clean Power Plan

- Adopted August 2015
- Focus is on reducing GHG emissions (relative to 2005 levels) from **existing power plants**:
  - Reduce GHG emissions 32% by 2030
  - Reduce SO_2 levels 90% by 2030
  - Reduce NO_x levels 72% by 2030
- States to submit plans to achieve target reduction by June 30, 2016
- Allows state or regionally led goals to be set for energy efficiency programs, cap-and-trade programs, etc.

For more information see: http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule

Biomass "carbon neutrality" to comply with existing source performance standards?

- Rather than give states the go-ahead to use biomass as a compliance tool in the final ESPS under the Clean Power Plan, EPA is:
  - Reviewing the appropriateness and basis for determining qualified biomass feedstock or feedstock categories
  - seeking comment on a pre-approved list of biomass materials
- EPA's focus is on "developing a biomass permitting rule that is intended to contain a permanent exemption" for certain types of biomass
- CWCCG supporting NACWA in leading the effort

Bioenergy projects and biomethane production at POTWs encouraged

SB 1122 – Bioenergy Projects

- Directs electrical corporations to procure ≥250 MW of generating capacity from bioenergy projects (110 MW to come from urban waste or wastewater digesters)

AB 1900 – Biomethane

- Requires CPUC to facilitate the injection of biomethane into the common carrier pipeline by establishing standards which will protect public health and pipeline integrity
- Phases of the proceedings examine:
  - Pipeline Integrity
  - Health Impacts
  - Interconnection Costs

Legislation in support of GHG reductions is calling for waste diversion from landfills

- AB 341 requires 75% of solid waste to be source reduced, recycled, or composted by year 2020
- AB 32 Scoping Plan goal for Waste Management sector requires development of a plan by 2016 to eliminate organic waste from landfills
- AB 1594 requires green waste no longer qualify for diversion credit when used as alternative daily cover (ADC) at a landfill

Benefit: POTWs are part of the solution for organic waste diversion

Issue for POTWs: Future use of biosolids as ADC is uncertain

Governor's FY 2015-16 Budget: Cap-and-Trade Auction Proceeds ($2.2B)

Still draft - to be finalized later in the legislative session

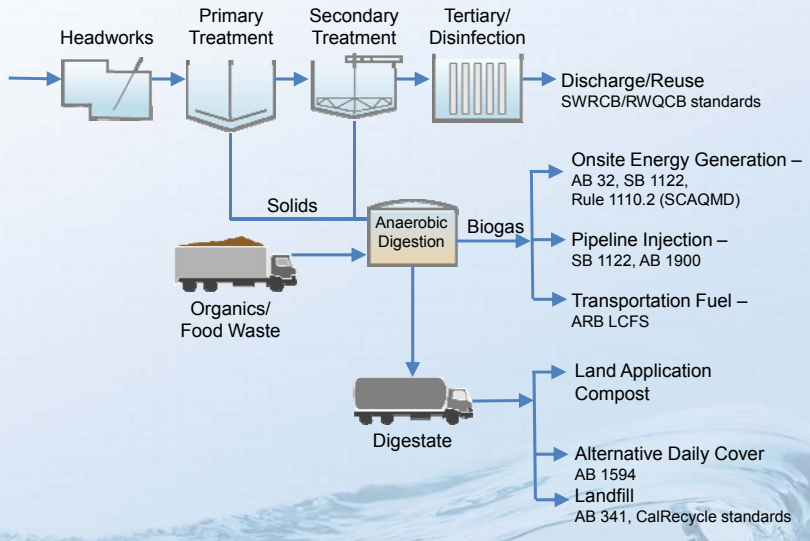
Figure CAP-01
2015-16 Cap and Trade Expenditure Plan
(Dollars in Millions)

DRAFT

Investment Category	Department	Program	Jan 10/ Accelerated Drought	May Revision	Total
Sustainable Communities and Clean Transportation	High-Speed Rail Authority	High-Speed Rail Project	$250	$250	$500
	State Transit Assistance	Low Carbon Transit Operations Program	$50	$50	$100
	Transportation Agency	Transit and Intercity Rail Capital Program	$100	$165	$265
	Strategic Growth Council	Affordable Housing and Sustainable Communities Program	$200	$200	$400
	Air Resources Board	Low Carbon Transportation	$200	$150	$350
Energy Efficiency and Clean Energy	Department of Community Services and Development	Energy Efficiency Upgrades/Weatherization	$75	$65	$140
	Department of General Services *	Energy Efficiency for Public Buildings	$20	$20	$40
	University of California/ California State University	Renewable Energy and Energy Efficiency Projects	$0	$60	$60
	Department of Water Resources/Department of Food and Agriculture	Water and Energy Efficiency	($30)	$60	$60
	Energy Commission/ Department of Water Resources	Drought Executive Order - Rebates for Appliances	$0	$30	$30
	Energy Commission/ Department of Water Resources	Drought Executive Order - Water and Energy Technology Program	$0	$30	$30
	Department of Food and Agriculture	Agricultural Energy and Operational Efficiency	$5	$20	$25
Natural Resources and Waste Diversion	Department of Fish and Wildlife	Wetlands and Watershed Restoration	$25	$40	$65
	Department of Forestry and Fire Protection	Forest Health	$42	$50	$92
	Department of Food and Agriculture	Healthy Soils	$0	$20	$20
	Cal Recycle	Waste Diversion	$25	$35	$60
Total			$992	$1,245	$2,237

* Shifts administration of Green Buildings and $20 million from the current year from Energy Commission to Department of General Services.

Legislation & regulations impact operations & present opportunities at POTWs

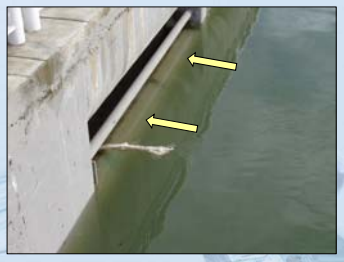


Governor's Executive Order (B-30-15) also addresses climate adaptation

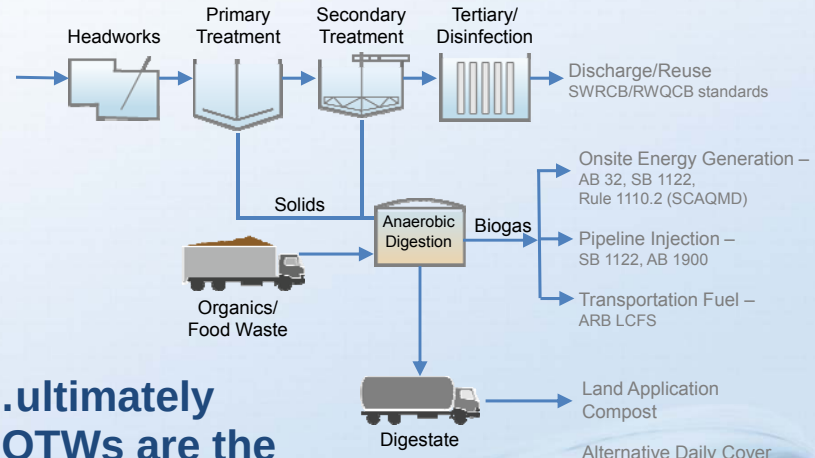
- Incorporate impacts into state's 5-Year Infrastructure Plan
- Update *Safeguarding California Plan* (infrastructure focus)
- Factor climate change into state agencies' planning and investment decisions
- Implement measures under existing agency and departmental authority to reduce GHG emissions

State is creating an online sea level rise planning database (per AB 2516)

- No $ allocated to Ocean Protection Council and CA Natural Resources Agency
- Existing studies/data from state level public (SWRCB and RWQCBs) & private agencies
- Survey **by July 1, 2015**
  http://www.opc.ca.gov/2015/05/slr-database/
- Information to feed into:
  - 5-year Infrastructure Plan
  - *Safeguarding California* Plan
  - CA Sea Level Rise Guidance Document
    http://www.opc.ca.gov/webmaster/ftp/pdf/docs/2013_SLR_Guidance_Update_FINAL1.pdf



While climate change is presenting challenges to the state and POTWs…



…ultimately POTWs are the backbone of resilient communities

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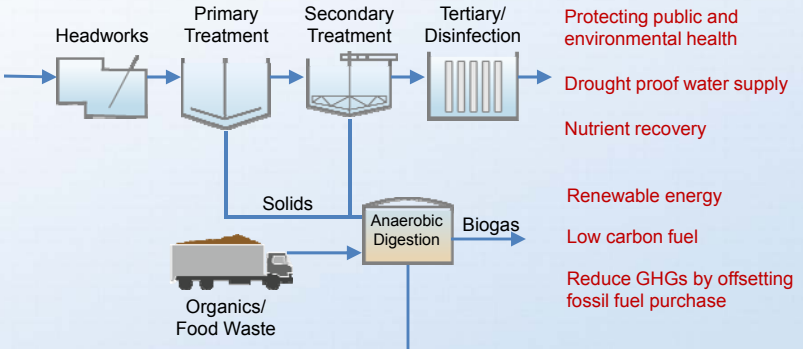

…ultimately POTWs are the backbone of resilient communities

Questions?
Next CWCCG meeting: Sept 10th (Face-to-Face)

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Previous Year