



# Greenhouse Gas Accounting for Wastewater Treatment & Biosolids Management

October 1, 2009 - Lawrence Heritage Park - Lawrence, MA

## Agenda

### **9:30 – 10:30 Background on GHG emissions; implications for wastewater/biosolids management**

Ned Beecher: global warming, climate change, IPCC, The Climate Registry, where we are today: voluntary emissions inventories & reporting; new EPA regulation; what might be coming; what we can do for now (and not waste time or effort); definitions; potential for economic benefit from GHG reductions is currently small, but reducing energy use saves \$, examples elsewhere (UKWIR, WSSA), and TCR *Local Government Ops Protocol* – the current No. American standard – and how it has and will evolve

Ned Beecher / Andrew Carpenter: overview of wastewater processes and where generation and emission points are (from collection system through biosolids management), how well each emission point is understood (how accurate estimates can be); focus on CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O

### **10:30 – 10:45 Break**

### **10:45 – 11:15 Focus on Energy and CO<sub>2</sub> Emissions**

Jason Turgeon: fossil fuel use = anthropogenic CO<sub>2</sub>; fossil fuel use / energy is biggest sector creating GHG emissions; energy efficiency pays and reduces CO<sub>2</sub> and can be done now; different fuels and electricity generation pools have different emissions factors; Scope 1 & 2 CO<sub>2</sub> emissions from fossil fuel use; interactive on-screen example of portfolio manager calculations focused on GHG emissions calculations, using data from LAWPCA

### **11:15 – 12:30 Example using the *Local Government Operations Protocol* at DC WASA**

John Willis / Ned Beecher: step-by-step demonstration of the process: setting boundaries and scopes, collecting data and identifying data gaps, determining emissions factors, calculations; challenges & unresolved issues: methanol example, N<sub>2</sub>O from nitrification/denitrification, methane in collection system

### **12:30 – 1:00 Lunch** (catered/box lunch provided by Sweeney's)

### **1:00 – 1:30 Estimating GHG emissions from biosolids management**

Ned Beecher / Andrew Carpenter: biosolids mostly ignored in current top-down protocols (e.g. *LGO*); review of biosolids management processes that potentially emit GHGs; knowledge gaps.

**1:30 – 2:10 Applying the current model to a typical Northeast biosolids management program**  
Andrew Carpenter: Use of the CCME “BEAM” calculator, using data from LAWPCA, creating 2008 baseline and projection of future emissions with anaerobic digestion & CHP; challenges & unresolved issues: N<sub>2</sub>O from biosolids land application; triggering commercial lime use

**2:10 – 2:30 Group experimentation with “BEAM” calculator**

**2:30 – 2:45 Break**

**3:00 – 3:30 Why are we doing this?**

John Willis: Knowing where you are let’s you plan where you are going: energy efficiency and new plans at DC WASA.

**Handouts:**

- Resources (1 page)
- The Climate Registry (4-page overview)
- Slides presented at the workshop

**Key messages:**

- N<sub>2</sub>O and CH<sub>4</sub> are most important – and we know the least about them.
- Assumptions and guesstimates are necessary at this point. Research is needed in many areas. But for now we can proceed with what we know now.
- Understanding, default values, and data will change in coming years; that’s okay, you can update today’s estimates tomorrow (protocols provide guidance on how to do this).
- If you are going to voluntarily report, you have to follow the TCR *Local Government Operations (and General Reporting) Protocol*, which is top-down and lumps wastewater treatment and biosolids management together, using crude default factors and focusing on Scope 1 & 2 emissions (Scope 3 reporting is optional).
- If you want to be more precise (e.g. for decision-making purposes), you can follow the TCR *Protocol*, but substitute more accurate default factors and assumptions from recent research, explaining your assumptions and citing your references.
- There are still many unknowns.
- Energy efficiency actions will save you money for now. Do it. But don’t forget that CH<sub>4</sub> and N<sub>2</sub>O are high GWP gases that must be evaluated to have a complete picture of your “carbon footprint.”
- By keeping up-to-date on this topic area, you can help define future protocols, methodologies, and regulatory systems.

**DON’T FORGET TO SIGN IN.**

**AT THE END OF THE DAY, YOU WILL BE GIVEN A CERTIFICATE OF ATTENDANCE, AWARDING FIVE (5) CONTACT TRAINING HOURS.**