State of Hawai`i - Department of Business, Economic Development, and Tourism
Greenhouse Gas Emissions Reduction Task Force
Meeting Minutes
Thursday, August 7, 2008
1:00 – 3:00 p.m.
Room 600 Leiopapa A Kamehameha Building
235 S. Beretania St., Honolulu 96813

Task Force Attendance
Present:
1. Mr. Theodore E. Liu (DBEDT)
2. Mr. Robbie Alm (Hawaiian Electric Co. Inc.)
3. Mr. Frank Clouse (Tesoro Corp.)
4. Dr. Makena Coffman (University of Hawaii)
5. Dr. Lorenz Magaard (University of Hawaii)
6. Mr. Gary North (Matson)
7. Mr. Gareth Sakakida (Hawaii Transportation Assn.)
8. Mr. Laurence K. Lau (DOH)
9. Mr. Mark Fox (The Nature Conservancy)

Excused:
10. Mr. Jeffrey Mikulina (Sierra Club)

1) The meeting was called to order by Co-Chair Lau at 1:08 pm.

2) The minutes from the July 3, 2008 meeting were approved after amendments suggested by Dr. Magaard and Co-Chair Lau. A motion to approve was made by Mr. Fox and seconded by Dr. Coffman.

3) Presentation on "Implementing Act 234: Hawai'i Greenhouse Gas Emissions Reduction." Presenters: Ms. Anne Choate and Ms. Susan Asam, ICF International. Ms. Asam gave a general overview of ICF's proposed approach to the Scope of Work laid out by DBEDT and DOH to fulfill the provisions of Act 234. ***(See also: PDF document of this presentation),***

a. Task 1 is to develop the historical and protected estimate s of Hawaii GHG emissions — this is the Task that the ICF team is currently engaged in. Task 1 covers the development of first updated 1990 emissions estimates and estimates for 2007 (or the most recent years that data can be obtained for), and then projections of emissions in 2020 under a Business As Usual scenario. ICF is currently reviewing the 1990 inventory last updated in 1997 and focusing on methodology, data and sources. ICF is assessing whether there are there improvements to data sources and methodologies given new and changing information and knowledge about emissions factors. The ICF team will begin working on the projections for 2020 once they have completed assessments and recommendations on updating the 1990 emissions estimates and developed the estimates for 2007 (or the most recent year available). ICF will provide support and assistance to DBEDT and DOH at the public meeting in November to present the updated inventory.

b.. Task 3, which will be undertaken in parallel with Task 4 will commence in 2009 after the emissions inventory is completed. Task 3 will also involve identifying potential emission reductions measures, the types of emission reductions measures which will be considered which would include direct market-based mechanisms such as cap and trade programs, regulations such as carbon taxes, fuel standards, complementary policies that are not necessarily direct reductions or required but encourage options that would be used to reduce emissions, incentives (monetary and non-monetary), and current and potential approaches to carbon offsets and sequestration. Under task 3 and task 4, ICF will be identifying, surveying, and evaluating data and needs to determine what are the right modeling tools for Hawaii and then trying to apply the modeling tools to the determine the best

emission reduction options. The team seeks to build upon the work and thought that has preceded the signing of the contract to ensure relevance and continuity. Ms. Asam gave an overview of modeling tools that ICF has used in past work and which they know to be strong options, but this is not necessarily an exhaustive list of what is under consideration.

c. Under task 5, ICF will start to develop the proposed rules for regulating entities that have been determined to be part of the emissions reduction plan. Depending on what the proposed plan is, rules will be developed accordingly. Task 6 involves providing periodic updates on our progress of activities to staff and the Task Force. Task 7 will be to provide planning, coordination, facilitation, and conducting public workshops to solicit stakeholder comment. This will include pre-meeting and post-meeting support and synthesizing input. Task 8 develops recommendations for an information management system. Task 9 is to develop proposed legislation for the recommended GHG Emissions Reduction Program.

Ms. Asam then gave an overview of the tentative schedule, including our immediate next steps for the remainder of the year. Next steps for the next year include developing historical and projected emissions estimates, preparing for the public hearing, developing the work plan, selecting modeling tools, run models, and develop rules. By August 15, 2008, ICF will submit its review of the 1997 inventory of 1990 GHG emissions and recommendations on data sources and methodologies used. By October 15, ICF will provide a draft updated inventory to DBEDT for review and will present this information at the November 13th public meeting.

d. Questions from the Task Force:

1. Dr. Magaard asked to what degree ICF has included the University of Hawaii at Manoa and its activities into its consideration and proposal. (For example, the University of Hawaii at Manoa is a founding reporter to the Climate Registry). Ms. Asam replied that ICF has subcontracted Mr. Craig Coleman as one of ICF's team members. Mr. Coleman is working on the UHM emissions inventory and The Climate Registry; he is also a resource "on the ground" in Hawaii.

2. Dr. Coffman asked about the forecast methodology about the forecast, and what more recent 'snapshot' year ICF planned to use. She commented that it might be advisable to gather data on the year 2005, as much of the potential national legislation is based on this year. Dr. Coffman, regarding the forecast methodology, also asked if ICF has given any thought to what type is to be used – e.g., historical projection or based on economic conditions. Ms. Choate replied that ICF has not yet made a determination of that and the projection methodology will vary by source category. The team could build up emission estimates from the bottom up using projected activity data. In instances where projected activity data, (e.g., barrels of oil or kW of electricity) is unavailable or unreliable, then we may need to use a trend line, however, this would not be an ideal situation. Regarding the Business As Usual scenario and its definition, Dr. Coffman asked if this refers to BAU in economic terms or technical assumptions (energy technologies used). Ms. Choate replied that ICF will take into account factors like pre-existing policies such as the State's renewable energy portfolio standards and what technologies might be involved in meeting them. It remains to be determined whether there is a policy reason why the business as usual scenario should reflect certain technological changes. Ms. Choate commented that generally, BAU will not reflect those kinds of changes; these may be reflected in some alternative scenario. This should be discussed in the future with TF and staff as appropriate.

3. Mr. Lau asked a question about scenario projections: will the analysis consider different rates or amounts of natural change? (e.g., the IPCC may assume a certain amount of sea level rise by 2050, but if the State gets data reflecting faster than expected sea level rise, that may necessitate a change in policy.) Ms. Choate replied that the inventory task only examines anthropogenic

emissions. The "scenarios" referenced on slide 22 refer more to scenarios for emissions reductions, rather than emissions mitigation or climate change impacts. Physical scenarios will not drive reduction targets, unless these physical scenarios have some material impact on the costs per ton of emissions reduced.

4. Dr. Coffman asked about the models ICF had discussed using for this project in their proposal. Regarding the Energy 2020 and IPM model, she asked which energy markets will be simulated, if the model simulates interactions between the utilities and refineries, and whether it includes inputs for transportation fuels. Further, she inquired about whether there price mechanisms in the suggested models or if they produces outputs in terms of BTUs (British Thermal Units). Ms. Choate requested that questions on Energy 2020 be held until experts in running that model are available, e.g. on a future call or in a committee meeting. TF members replied that was fine. Ms. Choate asked the TF to keep in mind that the document reviewed was ICF's proposal only, and staff felt that the best approach was to keep it flexible and open in regards to what the right modeling framework might be given that there had been some previous modeling activities in the State. In the past Energy 2020 and IPM have been used together to strengthen individual elements contained in each. She commented that she hopes that she and Susan can speak with TF and staff in November to do final determinations on the data needed and choice of modeling framework.

5. Ms. Estrella Seese, DBEDT staff, requested a short description of the different models ICF will be evaluating, to be distributed to the Task Force for reference. She asked that it be folded into the next work order or could be part 2 of the first work order previously issued. ICF agreed to provide this information.

6. Mr. Lau received confirmation from ICF that all six "Kyoto" greenhouse gases will be covered in the inventory and analysis. These are:

- Carbon dioxide (CO2)
- Methane (CH4)
- Nitrous oxide (N2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF6)

e. Co-Chair Lau called for final questions or questions from members of the public.

1. Dr. Victor Reyes, Economic Development specialist from the County of Maui, asked whether the updated greenhouse gas inventory and would break out the data by county level; he commented that Maui has a distinct interest in getting that level detail because of its own GHG reduction goals and this data will assist in projections for the different communities. Ms. Asam replied that ICF is planning to develop inventory estimates by island, but is not sure yet if they can get data for every source category by island. The team is either going to be developing a bottom up approach, taking up island specific data and building inventory, or may have to be allocate either from the State level down or County level down by individual island. There will be county-level detail, but the ultimate goal will be developing estimates at the island level.

2. Mr. Henry Curtis, Executive Director of Life of the Land, commented on the issue of who takes 'responsibility' for emissions under an inventory – if something is manufactured or produced on the mainland outside entities will have to count those greenhouse emissions, whereas if we make it locally it must be attributed to the state. This may have ramifications under a regulatory system. He asked if there is some method of determining that this won't result in an unintended consequence in this instance. Ms. Choate replied that inventories do not take into account life cycle emissions impact. In the case of an aluminum can, if the can were

manufactured on-island, electricity associated with manufacturing would be included in the Hawaii inventory, but if it were shipped here, the cans' refrigeration and transport would be captured for Hawaii, but if it was being imported, the manufacturing emissions from electricity would not be.

3. Mr. Willie Nagamine, Manager of DOH Clean Air Branch, commented on ICF's proposed timeline. He noted that the tentative schedule on Task 9 may need to be moved up because the Legislature normally meets January to April and therefore to prepare potential legislation, the block should be prior to session and possibly run into it as well. Mr. Ted Peck, DBEDT, commented that it is desirable to get draft legislation in by October.

4) Presenters from Covanta Energy, Inc.: Ms. Ellie Booth, Director, State Government Relations, and Mr. Jeffrey Hahn, Environmental Director. Presentation, *"Carbon Implications of Various Solid Waste Management Options,"* covered Covanta's HPOWER waste-to-energy plant at Campbell Industrial Park, and how other entities such as the European Union have treated waste to energy and landfill methane in their policies. ***(See also: PDF document of this presentation)***

a. Covanta Overview
- Covanta is the world's largest Waste-to-Energy company
- Operate in 8 countries and 15 states throughout the U.S.
- Headquarters in Fairfield, New Jersey
- More than 3,000 employees worldwide
- Operate the HPOWER waste-to-energy facility on behalf of the City and County of Honolulu
- 140 employees in Hawaii

b. Overview of HPower
- HPower is situated on 28 acres in Campbell Industrial Park.
- 2,160 tons-per-day of MSW into refuse derived fuel (RDF) for combustion.
- Generates 57 megawatts of energy from this renewable source.
- 4.5% of Oahu's electricity
- 45,000 homes
- Electricity sold to Hawaiian Electric Company.
- Recovers 20,000 tons of metals for recycling each year

c. Waste To Energy: GHG solution
- Renewable energy generated by WTE is:
- Reliable, baseload and continuous unlike other renewables.
- WTE generates electricity more efficiently than landfills (eg. Landfill methane capture)
- 550 kWh/ton
- National average landfill gas to energy generates 20 kWh/ton.
- Renewable energy from WTE generates15 billion kWh.
- Nationally, landfill gas projects is 6 billion kWh.

d. WTE: Avoided GHG factor
- EPA's Municipal Solid Waste Decision Support Tool (MSW-DST) determines the "avoided" GHG factor because:
- WTE generates more electrical power and therefore offsets more fossil fuel CO2,
- WTE avoids the methane not captured by the landfill. (In fact, WTE prevents the generation of methane when trash is processed as opposed to landfills), and
- WTE recovers ferrous and nonferrous metal.

e. How the European Union treats WTE
- The European Union landfill directive calls for a 65% reduction in landfilling as a means to meet the greenhouse gas reduction requirements in the Kyoto Protocol.

- The EU is increasing its use of WTE and recycling to manage its solid waste.
- 46.7% of household waste in Sweden goes to WTE.
- Energy recovery through WTE provides electricity & heat (cogeneration).
- Ashes from energy production serve as construction material for civil engineering.
- In addition to tipping fee, a penalty tax on disposal in landfills
- EU tax $65/ton
- UK tax $100/ton

f. EU Directive References
- Directive 2003/87/EC - WTE does not need a permit for CO2 emissions
- Directive 1999/31/EC – "Landfill Directive" – reduce landfilling of biodegradable waste to reduce negative effects including the greenhouse effect

g. Citations from IPCC: Ch 10 Waste Management
- GHG generation can be largely avoided through controlled aerobic composting and thermal processes such as incineration for waste-to-energy. (588)
- The energy content of waste can be more efficiently exploited using thermal processes than with production of biogas (589)
- Incineration reduces the mass of waste and can offset fossil fuel use; in addition, GHG emissions are avoided, except for the small contribution from fossil C (601)
- Thermal processes reduce GHG emissions relative to landfilling (Table 10.7)

h. How the Kyoto Protocol treats WTE
- The Kyoto Protocol's offset program for developing nations (CDM) qualifies waste-to-energy facilities as an eligible offset criteria, able to sell GHG credits

i. Why WTE:
- WTE manages 1 ton of MSW in 1-hour vs. 100 years.
- WTE is an engineered process with continuous combustion controls, dedicated air pollution control systems and continuous monitoring systems.
- WTE generates more net electrical power per ton of MSW than any landfill process (avoids more grid CO2).(550 versus 100)
- WTE avoids 100 % of methane potential all of the time (avoids more CH4)
- WTE enables recovery of ferrous and nonferrous metals (avoids more grid CO2)

j. Methane Emissions
- Methane generated by the landfill is emitted off the open face of the landfill and also migrates through the landfill cover
- Landfills generate methane 2 years into its operation
- Methane recovery typically begins 5 years after operation begins
- Soil oxidizes approximately 10% of the methane generated, and the remaining 90% is emitted into the atmosphere
- Of all the trash that is landfilled nationally:
- ½ vent
- ¼ flare methane
- ¼ use energy recovery (average is only 40% collected)

k. Methane
- 18% of global warming is due to methane emissions
- 2nd largest greenhouse gases in the U.S.
- Largest source of man-made methane: landfills
- Global Warming Potential (GWP) 25 x more potent than CO2
- Based on a 100 year lifecycle of methane
- A 20 year lifecycle has the GWP at 72 x more potent that CO2

- GWP of methane should be measured by a 20 to 50 lifecycle
- Based on the timeline for GHG reductions for which you are trying to eliminate the impact

l. Policy considerations for Hawaii
- Hawaii is fossil fuel dependent: exporting $7 billion annually for imported fuel.
- Hawaii has a local, renewable energy source that should be encouraged and supported through public policy.
- Changes in policy could reduce costs to the point where WTE on the neighbor islands could be economically supportable.
- Specific policy should be recognizing WTE as an eligible GHG offset technology and a net greenhouse gas reducer

m. Policy considerations for GHG in Hawaii reporting, inventory and reduction.
- Reported to California Climate Action Registry for 2005, 2006 & 2007
- Founding reporter of The Climate Registry
- Accurate reporting of CO2E emissions and Hawaii's GHG inventory should recognize WTE's GHG avoidance.
- WTE in Hawaii should not be treated as a point of regulation
- WTE should be identified as a net reducer of GHG emissions due to:
- avoidance of fossil grid CO2
- landfill methane
- recycled metals
- WTE should be a source of GHG emission offsets credits

n. Task Force Discussion of Covanta Presentation

1. Dr. Coffman asked what portion of the Renewable Portfolio Standard -- specifically for Oahu and then the State – is comprised of the electricity generated by the H-Power waste to energy plant. Ms. Booth replied that HPOWER contributes to 4.5% of HECO's RPS obligations. Mr. Alm commented that the two biggest contributors to the RPS statewide are H-Power and Puna Geothermal Venture on Hawaii island.

2. Mr. Lau asked what size waste-to-energy (WTE) plant might be economically feasible if one were built on the neighbor islands. Mr. Hahn replied that there have been discussions with the County of Maui going back to the mid-1990s looking at the feasibility of a WTE plant there. It would likely be approximately 500 tons or a little smaller. This involves a lot of equipment, and the price of steel and concrete has gone up considerably in recent years. The projected cost came as shock to the Hawaii County Council even at a 200 ton per day facility.

o. Public comment and questions

1. Joshua Stanboro, ICF/Evolution Sage, asked how WTE gets classified as renewable, and how much ash is generated per ton. He asked if that ash product methane or whether it is already expended before it gets to that state?

Mr. Hahn replied that there is no value left in the ash to generate methane; there are very few organics in the ash and in terms of volume, there is a ~90% reduction. The air permit ensures there are no fugitive emissions from the ash; water is also added which adds 25% to the dry ash weight. This goes to the landfill and has properties similar to wet concerete – it's hard and nothing gets through. Regarding WTE's classification as renewable, WTE is considered renewable in a variety of states because garbage is seen as 'local,' renewable resource. Ms. Booth added that the rationale behind that is that you can put that garbage in a landfill or you can take that garbage and create energy for communities. Ms. Booth commented that nationally, there is a link between WTE facilities and high recycling rates.

Mr. Stanboro asked if it is possible to substitute natural feedstock (biomass), like wood chips or other, in place of garbage should the (curbside and other) recycling program be highly successful. Mr. Hahn replied that in California, Covanta operates 6 biomass to energy plants, burning chips, agricultural waste, small tree chips, and shells -- even some construction and demolition debris like wallboard. Other waste streams are possible.

2. Mr. Peck asked Covanta to explain what is meant by "it (WTE plants) should not be treated as a point of regulation"? Ms. Booth relied that it should not be treated as a point of regulation because of the overall positive benefit that waste energy has in reducing greenhouse gases. If treated as such under a cap and trade system, by definition, the entity would not be able to claim avoided emissions as an offset. Since entities like landfills cannot accurately measure methane emitted they are usually looked at later/last as a point of regulation – Covanta does not feel this is entirely fair. Mr. Hahn commented that H-Power doesn't have wheels and we are over 1 MW. So WTE typically gets put in the electric sector which is a point of regulation under cap and trade.

3. Mr. Fox commented that the WCI (Western Climate Initiative) has issued recommendations and RGGI (Regional Greenhouse Gas Initiative) is underway. He asked where WTE has come out in both those instances? Have they taken under consideration the whole life span of WTE compared to landfilling? Mr. Hahn replied that in RGGI the focus is on electric sector and waste to energy is not included because it is not fossil-fuel plant. Regarding WCI, it is an ongoing process and Ms. Booth and Mr. Hahn have been active commenters to the process. Their position is that any generation that uses biomass with the incidental use of fossil fuel or an incidental amount of fossil material in their fuel they should not be in the electric sector of the WCI reporting requirements, and they feel they are getting traction on this position. They argue that WTE is renewable and if you start putting renewable as a point of regulation and you have command/control in the same program (as with California) it poses a problem if an entity that is renewable has to get allowances in order to operate in a cap and trade system. Actual baseloaded renewables can start decreasing because the price will go up.

4. Mr. Hahn commented that Covanta has quantified its emissions (6 GHGs) in a bottom-up accounting according to protocols, which has been verified independently for 3 years. The data has been accepted by the CCAR (California Climate Action Registry). Covanta plans to have all North American operations reporting to the Climate Registry, over 55 facilities nationwide. He offered assistance and support in working with the state to accurately follow reporting protocols since they are experienced in this area.

5. Mr. Fox asked if Covanta is able to report those emissions in conjunction with accurate data on avoided fossil fuels, landfill methane, and recycled metals e.g. looking at what came out of the company's stacks versus emissions if energy had to be generated with energy fossil fuel burning or if the waste was landfilled and methane generated. Mr. Hahn replied that in the protocols they have set up now they have anticipated that to some degree. Covanta does the reporting of its emissions, and in a box on the registry CCAR website allows the reporter to show the amount of MW hours generated, how much was actually avoided, and carbon profile for the utilities sold to (because utilities in CA are reporting as well).

6. Mr. Reyes commented that it should be kept in mind, if WTE is attempting to gain credits/offsets, that by definition MSW has a lot of fossil-based content (plastic content, etc.). The high heat content is preferred feedstock for this very reason. Mr. Hahn replied that H-Power stack emissions, contrary to some reports, have been tested through ASTM D60-866 and it has been found through sampling that only 32% is CO2 is fossil-based and 68% is biomass. Some EIA numbers may be as high as 50% fossil but that's not the case here.

5) Committee Reports

a. Analysis Committee report by Dr. Coffman

The committee met on August 4th and went over ICF's approach to the scope of work, similar to what was presented today. The committee had a good discussion on data and models and came up with several questions, which were asked of Susan and Anne today. The committee discussed the emissions forecast, models proposed in the ICF document, and developed questions about the models specifically on the emissions forecast the Energy 2020 model (e.g.,what are the energy markets included) as well as the IPM model which focused more specifically on electricity, and how transportation will be modeled. As ICF discussed today, we expect to hear more about it in November after the inventory update.

The other item discussed was passing along to ICF the TF's list of priorities and goals that we worked on in the committees. This list represents the task force objectives the consultant should consider in developing the work plan. Committee requested that staff provide that as guidance to ICF.

b. Policy Committee

No policy meeting was held.

c. Outreach Committee

1. Mr. Lau reported on the Outreach Committee meeting. The Committee is recommending to the full task force that support a contest, a video contest, and a poster contest to engage a variety of people in becoming more knowledgeable about greenhouse gas issues; the general thought was that the winning entries would be part of the November 13 inventory meeting as a way to bring public attention to inventory. Mr. Mikulina put together a draft plan of what steps would be involved. DBEDT staff added that Mr. Mikulina had spoken with PR firms to get a general sense of some theoretical deliverables and how much they would normally charge for them to give to get a handle of that. There are a number of similar contests for different age categories in categories such as health and recycling. The idea is ideally, we could take advantage of some existing contest structure instead of having to create one. This may have to be pushed back due to our tight timeline, however, and difficulties in getting in touch with schools for promotion of the contest(s). The committee was informed that theoretically up to $100,000 of the appropriation could be available for Outreach, subject to Task Force decision. Mr. Lau commented that historically, government contracting can be a slow process and this needs to be taken into account. The Task Force had a general discussion and was in agreement that the Outreach Committee should go forward with its planning and supported the idea of a contest. There was agreement that the contest and major elements would be better after the November meeting, but that some outreach to get turnout for the public meeting was desirable. Mr. Fox expressed support for the idea of not hiring a PR firm to do all the PSAs to create messages, but actually doing outreach to create the outreach materials, so the act of creating outreach material is actually outreach itself – engaging the public in a contest. TF members felt this general outreach plan has merit. The Outreach committee will meet again and do further planning after the August TF meeting.

2. Co-Chair Lau asked for public comment.

Ms. Kaiulani de Silva commented that for school contests, in HECO's experience, it needs to be planned by semester with a relatively long lead time. The inventory may be too specific to tie into such a contest; it would be better to have the contest address general GHG information and issues. Basic information needs to be provided for students according to age groups. It has potential to be a great tool for general educational

curriculum. Dr. Coffman suggested that the inventory data and information, once it is issued, could be packaged to target, for example, high school science curricula. Staff suggested we should meet with DOE curriculum teachers.

Mr. Nagamine asked about funding and funding amounts – if the $100,000 mentioned was immediately available. Mr. Lau and Mr. Peck replied that DBEDT needs to request release of our second installment of $500,000 and we have no projection of any monies after this fiscal year. This release request is in progress but there is no guarantee for funding.

Mr. Steve Bretschneider, DBEDT Chief Marketing Officer, commented that it would be useful to set up editorial board meetings (for newspapers) in advance of the inventory public meeting.

Mr. Peck informed the TF that the COO of the Western States Petroleum Alliance will be here the week of the 8th of November and they have requested being able to present on their interactions with California AB32 at a committee meeting.

6) Housekeeping Matters and Future Agenda Items

a. Next meeting is TBA. May need to adjust time to earlier in the day to accommodate ICF.

7) Public comment. Public comment is reflected above.

8) Adjournment.

a. The meeting was adjourned at 3:04 pm. A motion to adjourn was made by Mr. North and seconded by Mr. Peck.