State of Hawai`i - Department of Business, Economic Development, and Tourism
Greenhouse Gas Emissions Reduction Task Force
Meeting Minutes
Thursday, June 5, 2008
3:00 – 5:00 p.m.,
Room 600 Leiopapa A Kamehameha Building
235 S. Beretania St., Honolulu 96813

Attendance
Present:
1. Mr. Robbie Alm (Hawaiian Electric Co. Inc.)
2. Mr. Frank Clouse (Tesoro Corp.)
3. Dr. Makena Coffman (University of Hawai`i)
4. Mr. Mark Fox (The Nature Conservancy)
5. Mr. Theodore E. Liu (DBEDT)
6. Mr. Wilfred Nagamine, Designee for Mr. Laurence K. Lau (Department of Health)
7. Dr. Lorenz Magaard (University of Hawai`i)
8. Mr. Jeffrey Mikulina (Sierra Club)
9. Mr. Gareth Sakakida (Hawai`i Transportation Association)

Excused:
1. Mr. Gary North (Matson Navigation Co.)

1) The meeting was called to order by Mr. Wilfred Nagamine, designee for Co-Chair Mr. Laurence Lau, at 3:04 pm.

2) The minutes from the May 1, 2008 TF meeting were approved without amendments. Mr. Mark Fox made a motion to approve, and Mr. Robbie Alm seconded the motion.

3) Presentation on "Hawai`i GHG Abatement Cost Curve" by McKinsey & Co, management consulting firm, prepared for the Hawai`i Clean Energy Initiative. Presenters were Mr. Matt Rogers, Mr. Brandon Davito, and Mr. Nick Hudson.

a. Two years ago, McKinsey began a study of energy productivity and increasing GDP output per unit of energy input. This led to discussions of a global greenhouse gas abatement curve – how much would it cost (per unit) to achieve a given level of abatement? The conclusion was that, worldwide, Kyoto Protocol targets could be met at a cost of less than 40 Euros per ton on a marginal cost basis. The report was then narrowed down for the US; this analysis found that there are 3-4 gigatons of abatement opportunities for the US at $50 per ton carbon dioxide equivalent (tCO2e) at $60/barrel of oil (bbl). (This report was circulated to the TF in November 2007; it is available for download at: http://www.mckinsey.com/clientservice/ccsi/pdf/US_ghg_final_report.pdf) This year, McKinsey applied the U.S. methodology to the specific circumstances of Hawai`i and analyzed abatement opportunities relative to a business as usual (BAU) case as input to the work of the State of Hawai`i/US DOE Hawai`i Clean Energy Initiative and policy makers in Hawai`i.

b. The team's objective was to develop a comprehensive, consistent fact base to identify GHG abatement opportunities and crude oil consumption. McKinsey & Co. looked at Hawai`i's anthropogenic GHG emissions, total energy use and transportation, excluding international air travel but including domestic and inter-island air travel. The analysts looked for abatement opportunities under $50/ton CO2e. They looked for technologies which were fairly mature and had a predictable, consistent cost and development cost. The team did not advocate for any particular technology, instead it evaluated each on a consistent set of criteria. Capital, operating and maintenance costs of technologies were all considered.

c. Their analysis did not assume any changes in consumer lifestyle or behaviors (e.g., assumed same levels of consumption and did not account for the dynamics of reduced consumption in

response to higher energy costs in the future); nor did it include broader societal costs or benefits such as improved energy security. Policy implementation and transaction costs were not considered.

d. McKinsey feels that Hawai`i has a good opportunity to provide leadership to the rest of the US in GHG abatement and reducing oil dependence. In 2005 (baseline year) Hawai`i imported 42 million bbls (MMB) of crude oil and emitted 22 million tons (MMT) of CO2e/year. Under a BAU scenario of normal economic growth, by 2030, this will increase to 62 MMB and 31 MMT CO2e/year emitted. On a per capita basis, this means that in 2005, 33 barrels of oil were consumed and 17 tons of GHG were emitted per person.

e. The analysis showed that, using a mix of policy and technology options, Hawai`i could potentially reduce oil consumption by 17 MMB per year, and reduce greenhouse gas emissions by 7.8 MMT CO2e per year in a "mid-range" scenario, and 30 MMB of crude oil and 13 MMT CO2e in a "high-range" case. Energy costs would decline slightly in the "mid-range" case, assuming $60/bbl of oil, and in the high-range case, and if crude oil rose to $120/bbl, energy costs would be decreased significantly. Renewable energy would serve as a hedge against high crude oil prices.

f. Hawai`i's energy cost situation is particularly precarious because oil prices cause both electric utility bills and gasoline costs to rise - unlike the mainland U.S. whose power plants more commonly use coal and natural gas.

g. The reductions could occur in three phases:

1 - energy efficiency, geothermal/wind development, and converting existing sugarcane into fuel

2 - combined heat and air conditioning, developing central station solar, firm wind, and expanding ethanol production significantly. Maui and O'ahu connected via cable to transmit wind generated power.

3 - next-generation efficiency, distributed solar (e.g. rooftop photovoltaics), wind-powered plug-in hybrids (PHEV), and others which are not mature technologies yet.

h. The analysis found that, unlike on the mainland, the top potential technologies in renewable energy and efficiency are mature ones. In Hawai`i, the top 10 opportunities make up 80% of potential abatement strategies; this figure drops to 33% on the mainland. Opportunities here are much more concentrated.

i. Hawai`i consumes 33 bbl/capita for crude oil, compared to 25 bbl/capita for the US as a whole. For GHGs, Hawai`i emits 17 tCO2e per capita per year, compared to 14 tons for California and 24 tons for the US as a whole. Hawai`i's economic oil intensity (measured as Bbl/$million GDP) is much higher than the US as a whole. The lesser carbon efficiency of burning oil for electricity generation helps to account for Hawai`i having higher GHG emissions than a state like California, or countries which use nuclear power or natural gas for generation. It is important to remember that GDP growth must still continue with abatement.

j. Under a BAU scenario, Hawai`i's emissions are forecasted to grow at about 1.4% per year, and crude oil imports will grow at 1.6% per year. Under BAU, Hawai`i will be at 31.0 MMt CO2e/yr in 2030. By 2030, a hypothetical target of 20% under 1990 levels would mean would mean a 50% reduction from today's trajectory.

k. To help prioritize and sequence opportunities for abatement under the "mid range" abatement case, McKinsey created a cost curve based at $60/bbl oil which identifies opportunities that cost less than $50/Ton. On this graph, items on the vertical axis represent cost of each initiative, and the horizontal axis represents the volume (in tons of abatement) that can be achieved. Items below the "0" line in the graph represent initiatives that have the greatest positive net cost benefit to

society. Efficiency in commercial electronics, lighting and car fuel economy fall in the positive side of the graph; initiatives such as biomass and solar PV are a net cost to society but are still economic for this analysis because they fall below $50/Ton for abatement. Initiatives such as hybridization of light trucks and PHEV are not yet economic under this scenario. As the price of crude oil goes up, more initiatives to the right of the graph become economic.

l. In the medium abatement case, Hawai`i would be slightly above the 1990 levels of emissions (1990 levels=18 MMT CO2e) by 2030; however if initiatives costing higher than $50/ton were implemented, Hawai`i could achieve an additional 2.4 MMT reduction and would be under 1990 levels.

The analysis did not model for the year 2020, so it is unknown what abatement would be possible in 2020, relevant to Act 234. The 2020 BAU forecast will also be subject to what initiatives are implemented between today and that year.

m. For oil abatement, at $60/bbl in the high abatement case, energy spend on oil would decrease by 5% over the 2030 cost (in 2005 real dollars) in a BAU scenario. Under oil prices of $120/bbl, in the high abatement case, this savings would increase significantly -- to 27%.

n. TF Discussion; Public comment

i. TF member Mr. Frank Clouse asked what the assumptions were in the ethanol projections in the McKinsey study. McKinsey staff replied that a lower BTU value was calculated for ethanol and that in the high case scenario, a fuel mix of 70% ethanol was assumed – which would require a flex fuel vehicle. In the low case scenario, this percentage was 30%. The study assumes locally produced ethanol. According to the cost curve, biofuels are more expensive than gasoline when oil is at $60 per barrel, but not at current oil prices. Mr. Clouse also asked about the assumptions for biofuels crops – were the 600 square miles for sugarcane concentrated on the Big Island and Maui? McKinsey staff replied that yes, the ratio of land calculated that is located on the Big Island compared to the other 3 islands (Maui, O`ahu, Kaua`i) is approximately 2:1. The assumptions for cellulosic ethanol involve 135,000 acres of woody crops on the Big Island. Other data on biofuels came from an HNEI study on biofuels, DBEDT and discussions with Maria Tome, SID Alternate Energy Engineer. The high case assumes that Maui supplies electricity to O`ahu via underwater cable, development of concentrated solar power and higher penetrations of other renewables.

For biofuels, the “medium case” assumes that historical peak yields of biofuels crops are attained. For the biofuels “high case,” it is assumed that cellulosic ethanol is added to the historical peak, along with plug-in electric hybrid vehicles.

ii. Mr. Paul Bernstein, member of the public, asked McKinsey staff why they thought these measures were so slow in being implemented (by policymakers). Mr. Davito replied that, in the example of computer resistors, the cost to make them more efficient would be nominal. However, the high price elasticity of that product means that on a first cost basis, consumers would not choose the higher-priced, efficient product and therefore the manufacturer would not make the sale. This same problem exists with homebuilders and green design with slightly higher up-front costs. Another example is in a chemical manufacturing plant – if one area saves energy in its operations, the savings may show up in another area of the production process, removing the incentive. Integrated flow management is needed to ensure better price signals.

iii. Mr. Clouse asked if water use, land use and siting were considered in the forecasts of biofuels for the McKinsey analysis. McKinsey staff replied that the analysis was based on existing projections of biofuels availability.

iv. Mr. Sam Pintz, member of the public, added that there are bottlenecks in the (regulatory and permitting) system which are different at different points and for different sectors. He also commented that there are questions about what transmission and distribution upgrades will be needed to fulfill Hawai`i's renewable energy potential – for example, the local grid may not be robust enough to handle the output on the sunniest day, due to the type of copper wire now utilized, etc.

4) Presentation on European Union (EU) Emissions Trading System by Ms. Jill Duggan, DEFRA (Department for Environment, Food and Rural Affairs, British Consulate-General) International Emissions Trading specialist; Advisor to the Western Climate Initiative

a. The UK Context
- Political consensus – all major political parties agree that tackling climate change is an urgent priority
- Emissions trading has a central role in reducing emissions
- environmental certainty,
- lowest cost emissions reductions
- Climate Change Bill – independent Climate Change Committee to advise on targets and effort from sectors, enabling legislation for new measures such as emissions trading
- Other complementary mitigation measures also used and further measures required:

b. Existing Policies
- New homes zero carbon by 2016
- UK only trading systems – Carbon Reduction Commitment for commercial and public sector not covered by ETS
- Climate Change Levy
- Local authority initiatives – e.g. low emissions zone, congestion charge

c. UK Emissions Trading Scheme 2002-2006
- Voluntary
- Participants received financial incentives for taking on binding targets
- Bid in descending clock auction for emissions at incentive prices
- 31 direct participants bid to reduce 5.96 million tonnes 18 million tonnes of CO2e over 5 years.
- 6,000 Climate Change Agreement participants could purchase allowances to meet their targets

d. What we learned from the voluntary scheme
- Early action helped put the City and ancillary services in a good position for emissions trading – verifiers, lawyers, consultants
- Difficult to establish BAU and therefore real additional emissions reductions
- Need tough targets and scarcity to achieve a market

e. Key features of EU ETS
- "Cap and trade" scheme covering CO2 emissions from combustion processes (approx 46% of EU CO2 emissions)
- Phase 1 EU ETS - 2005-2007 - 'learning phase'
- Phase 2 EU ETS - 2008-2012 - 'Kyoto Commitment Period'
- 1 European Union Allowance (EUA) = 1 metric tonne of CO2
- Allowances freely tradable throughout 27 EU Member States
- Most allowances allocated free - range of methods, including historical emissions, projected emissions, sector benchmarks etc
- Limited use of Kyoto project credits

f. Process for National Allocation Plans – Phase I

- EU Member States follow Directive in producing National Allocation Plans
- Requires stakeholder consultation
- Within rules prepare own plans for cap and how to allocate to covered sectors
- Present plan to Other Member States
- Submit plan to European Commission
- Commission assesses plan against Directive – in Phase I cut allocations by 220 million tonnes per annum against proposals
- Final allocation agreed

g. Key problems with Phase I

- Lack of data
- Free allocation led to lobbying
- Lack of consistency across member states – led to lowest common denominator
- Lack of transparency in Member States' Plans
- Staggered start dates – plans still being approved in 2006
- Volatile prices
- Poor handling of reconciliation data
- Lobbying, lack of data and lack of transparency on other Member States plans led to OVERALLOCATION

h. Process for National Allocation Plans – Phase II

- Basic as for Phase I but:
- Agreement on 'scope' definitions – including significant additional sources
- Agreement on 'small installations' aggregation rules
- Template for submission of NAPs
- More harmonisation on rules
- Good verified data from 2005 verified emissions
- Greater transparency, more experience – Commission still took around 200 million tonnes a year out of the scheme

i. Is it successful as a policy?

- Emissions Trading works – Point Carbon Survey of participants in 2006 found 15% took future cost of carbon into account for investments
- By 2007 this had risen to 65%
- 27 Member States have put in place the institutional framework for Trading
- 3 from outside the EU have linked to EU ETS – Norway, Iceland and Lichtenstein
- EU business has gained experience that will help them in the low carbon economy

j. Is this policy a success for the environment?

- Trading allows more ambition than acting alone – eg UK set 2008-2012 EU ETS cap 13% below 2005 verified emissions
- Ellerman et al found evidence of abatement in 2005 but will be easier to judge for 2008-2012 period
- No real evidence of leakage yet – and as the global carbon market develops less chance of leakage in the future
- Helped generate $17.5 million investment in CDM carbon abatement projects in the developing world in 2007

k. Is this policy a success as a market?

- Around 8 million EUAs traded a day
- Stable 2008-2012 price – around €20 a tonne
- 2007 Total financial value: €40bn – around $63 bn
- EU ETS 70%
- CDM primary 15% CDM secondary 14%

- JI 1%
- Other 0.5%
- CDM increased from 563Mt and €3.9bn in 2006 to 947Mt and €12bn in 2007 (68% increase in volume, 199% increase in value)

l. Lessons learned – European Commission Proposal for 2013 and beyond
- Central cap – linear decrease from 2008-12 average annual emissions
- Full auctioning for electricity generators and CCS (except heat for CHP – full auctioning by 2020)
- Community wide rules for free allocation. Sectors share of allocation will be in line with 2005-7 verified emissions
- Full auctioning for sectors by 2020 (unless carbon leakage)
- Tighter limits on use of project credits in EU until international agreement reached

5) Committee Reports

a. Due to lack of time, Committee Reports were deferred until the July 3rd meeting.

6) Housekeeping Matters and Future Agenda Items

a. Outreach Committee

Discussion of public meeting

Mr. Ted Peck, DBEDT Director's designee for the May Outreach Committee meeting, informed the TF that the committee is planning a public meeting for the Fall of 2008. The purpose of the meeting will be to educate the public on climate change issues, Act 234 provisions and timeline, work to date, and to present a draft emissions inventory update. Feedback and public comments will be incorporated by the consultant into the work plan and inventory. Staff will research venues and formats and come back with a recommendation for the TF. Mr. Mikulina commented that an evening meeting better accommodates people who work full-time; he also encouraged exploring options for videoconferencing to neighbor islands.

Outreach committee informational materials

The Outreach committee was asked to prepare a 1-page draft informational brief which TF members can use to inform members of the public or affected sectors about Act 234 and its potential implications. Staff will have a draft ready for review by the TF by the next meeting.

b. Mr. Peck advised the TF hat the RFP has been officially posted by the Administrative Services Office (ASO) and will be open for responses for fifteen (15) days. After the posting period ends on June 18, the evaluation committee will receive copies of the proposals and will submit their rankings to the ASO.

c. McKinsey & Co. staff will be asked to participate in a follow-up conference call to answer any further questions about their presentation (Greenhouse Gas Emissions Abatement Cost Curve).

7) Public comment. Public comment is reflected above.

8) Adjournment.

a. The meeting was adjourned at 5:05 pm. A motion to adjourn was made by Mr. Alm and seconded by Mr. Sakakida.

b. The next meeting will be held July 3, 2008.