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Meeting #7 Summary
Minnesota Climate Change Advisory Group (MCCAG)
St. Paul, Minnesota
January 10, 2008

Attendees:

MCCAG: Mark Peters (for Jon Anderson), Leith Anderson, Willis Anthony, Daniel Bartholomay, Alexander Bascom, Jan Callison, Rick Carter, Staci Bohlen (for Mitch Davis), Chuck Dayton, Jim Erkel, Barbara Freese, Ann Glumac, Bill Grant, J. Drake Hamilton, Scott Harrison, Andy Hart, Bill Heaney, Jonathan Holmes, Robert Jagusch, Greg Jason, Boise Jones, John Kelly, Julie Ketchum, Gail Eadie (for Jeffery Korsmo), Scott Lambert, Jeremy Estenson (for Greg Langford), Clarence Lehman, Chuck MacFarlane, Jim Marchessault, Tim McGraw, Margaret Hodnik (for Dave McMillan), Jeff Muffat, Bob Ambrose (for Eric Olsen), Stephanie Kent (for Pat Perry), Doug Peterson, Steve Raukar, Mike Robertson, Rick Evans (for David Sparby), Will Steger, Peter Sullivan, Barb Thoman, Nim Traeger, Jeff Wilkes, Bruno Zagar,

Department of Commerce (DOC): Edward Garvey, Linda Limback, Bill Sierks, Janet Streff

Pollution Control Agency (PCA): Brad Moore, David Thornton, Todd Biewen, Peter Ciborowski, Anne Claflin, Colleen Coyne, Joan Heldt, Lisa Herschberger, Jeff Ledermann, John Seltz, Rebecca Walter

Center for Climate Strategies (CCS): Tom Peterson, Bill Dougherty, Will Schroeer, and by telephone Tom Looby, Steve Roe, Randy Strait.

Others: See Attachment for Members of the Public Who Attended MCCAG Meeting #7.

Background Documents: (all posted at www.mnclimatechange.us)

1. Notice and Agenda
2. PowerPoint Presentation
3. Memo to MCCAG on Preparation for Meeting #7
4. Policy Option Descriptions for Analysis for each TWG

Discussion and Conclusions:

1. Welcome and Introductions

Edward Garvey welcomed attendees and explained that the seats at the head of the table will accommodate TWG members when it is their time to describe their options. Edward

also explained that to save paper, there is only one copy of the meeting materials for every three MCCAG members. It was clarified that only one vote per person is allowed, so anyone representing more than one proxy will receive only one vote.

2. Approval of Summary of Prior Meeting; Other Logistics

The MCCAG deferred approval of the summary for Meeting #6 since the summary was not posted prior to Meeting #7. The summary for Meeting #6 will be posted after the meeting today, and the MCCAG will provide its review comments at the final meeting on January 24.

David Thornton noted that at the last meeting Boise Jones raised questions about the environmental impacts of biofuels on public health. Jones added that MCCAG hasn't adequately developed a record of how environmental justice issues relate to the policy issues being discussed. Tom Peterson responded that CCS asked the TWGs to consider environmental justice issues in the policy options, but it was too late in the process. So he recommended that draft language be inserted to acknowledge the potential environmental justice issues raised by the policy options, and that the TWGs further analyze and address these issues as the options are implemented.

It was also noted that about eight pages were missing from the Transportation and Land Use policy options because the full package wasn't posted before for the meeting. Those pages were made available for review at the meeting.

3. Review of the MCCAG Process Status and Next Steps

Tom Peterson said that the Final Report would be produced after the final Meeting #8 on January 24. It would include the policy option templates, plus up-front summaries for quick reads. He noted that between Meeting #7 and the final meeting, there's only one more week for TWG phone conferences and inclusion of the decisions made during those calls in the next set of documents for the final meeting.

The agenda was reviewed, and the reporting order of the TWGs was revised as follows: Residential, Commercial, and Industrial (RCI), Energy Supply (ES), Transportation and Land Use (TLU), Agriculture, Forestry, and Waste (AFW), Cross-Cutting Issues (CC), and Cap and Trade (C&T).

Slides #5 and 6—Draft MN GHG Supply Curve and 12 States GHG Supply Curve

Tom Peterson reviewed the first slide, showing the draft Minnesota supply curve based on the numbers derived from tonnage reductions for each policy option. He then showed a slide of the combined supply curve for 12 states, and noted that the same S curve is appearing in all the curves for greenhouse gas (GHG) abatement for the various options. There is a consistency in the shape of the curve and the general outcomes that have come out of the process over the last 6 months. What's different is the 2020 data for the 12 states numbers versus the Minnesota 2025 data.

Slide 7—GHG Reductions—Existing Actions

Randy Strait then reviewed a slide showing Minnesota GHG reductions from existing actions. He explained what actions each line represented, because the legend was difficult to read toward the back of the room. An MCCAG member asked why growth accelerated between 2010 and 2015. Mr. Strait responded that the majority of the increase is associated with in-state production of electricity.

Another MCCAG member commented that it looks like 40 million tons away from 30% by 2025, and asked whether it's coincidental that that's the point in the curve where costs rise above zero. He also asked whether we go through a similar exercise for those dots for various policy options. Tom Peterson explained that the data are in the tables, and that these actions are above and beyond those listed in the existing options. Another member noted that the jump from 2010 to 2015 seems less like a jump and more like a drop from 2005.

Slides 8 and 9—MN GHG Targets 2025: Consumption and Production

Tom Peterson then showed slides that compared the reference case emissions forecast to emission reductions associated with recent existing actions in Minnesota, emission reductions associated with the MCCAG actions, and Minnesota's statewide GHG reduction targets for 2015 and 2025 on a gross consumption and production basis. For both a consumption and production basis, the preliminary (draft) results indicate that Minnesota should be able to achieve its statewide GHG reduction targets based on the analysis of the MCCAG actions. He noted that these are preliminary results and that the numbers will change based on comments that the MCCAG provides on the sector-specific options it reviews today.

Slide 10—MN GHG Targets 2050

The state has a goal to reduce GHG emissions 80% below 2005 emission levels by 2050. Tom Peterson introduced the next slide as a first shot extending the forecast of the reference case emissions and emission reductions from existing and MCCAG actions to 2050. Randy Strait explained that linear extrapolation was used to extend the reference case projections and reductions from MCCAG actions to 2050. In the absence of any data, reductions from existing actions were held constant at 2025 levels. It was noted that the increment between years on the x-axis was inconsistent resulting in some "kinks" in the lines on the graphs. It was also noted that these are very draft results and members of the MCCAG and the TWGs are invited to provide suggestions on how to improve the forecast to 2050.

Slide 11—Draft Results

Tom Peterson noted that this slide showed the numbers used to develop the graphs in the previous slides. The reductions from options being considered by the MCCAG have been "scrubbed" to eliminate double counting of emission reductions. He noted again that these are preliminary results and will change based on the MCCAG's comments on the individual pending policy options it reviews today.

4. Public Input and Announcements

Public Input

Continuing on his comments during Meeting #6, Tim Browell (Eureka Recycling, Inc.) commented on AFW-7 (Front-End Waste Management Technologies) and AFW-8 (End of Life Waste Management Practices). He noted that Eureka supports AFW-7, but the option has no concrete timeframes, lacks a good plan for achieving realistic goals, and most of the implementation mechanisms are voluntary. Eureka would like to know if the goals are not reachable, whether the mandatory mechanisms will replace the voluntary mechanisms. He added that Minnesota formerly had a 20% recycling and recovery rate when its program was based on voluntary guidelines, that the recycling rate is now 46% because the program is mandatory, and that Minnesota has had similar success with recycling and recovery of organics and compost.

Eureka does not support AFW-8, which is a business as usual scenario for compost. The net value of this option should be quantified, and its projected costs should be compared to the projected recycling, recovery, and GHG reduction rates. Brownell cautioned that if AFW-8 is approved and the infrastructure is built to burn and bury waste, the waste flow will be obligated by bonds, and opportunities for recycling and recovery will be lost. Eureka would like the MCCAG to come up with an alternative recommendation “if the numbers don’t work” (i.e., if the costs exceed the benefits).

5. Review and Approval of the Draft Policy Options

The CCS facilitator for each TWG briefly reviewed the description and design characteristics for each policy option for which the MCCAG’s approval was pending, invited TWG members to offer clarifying comments when their TWG policies were presented, and then invited questions and concerns to be expressed by remaining MCCAG members and the public. Following are brief summaries of the discussion on each option, along with the MCCAG’s decisions on the next steps for the options.

Residential, Commercial, and Industrial

Four RCI options were presented for the MCCAG’s approval: RCI-4, RCI-6, RCI-7, and RCI-10. Except for RCI-4, the other three options achieve GHG reductions with negative costs to society. One member asked whether the RCI TWG has voted on the four RCI options and, if so, whether the TWG was formally recommending the options at the meeting. Bill Dougherty responded that there is no overwhelming disagreement on the TWG regarding these options, and Tom Peterson added that all of the options are being presented for the MCCAG’s final approval. Bill also noted that although RCI-1B has been discussed, the analysis of the technical feasibility and costs and benefits of moving from 1.5% to 2% is incomplete and the option needs further vetting.

Summary of Comments and Responses to Questions

RCI-1b (Maximize Savings From the Utility Conservation Improvement Program (CIP))— At its prior meeting the MCCAG asked the TWG to quantify impacts associated with increasing the CIP requirement from 1.5% to 2.0%. It was reported that the TWG had not yet completed this analysis; the analysis will be presented at the next MCCAG meeting. Note that the MCCAG approved RCI-1 at its prior meeting that reflects the CIP requirement of 1.5%.

RCI-4 (Incentives and Resources To Promote Combined Heat and Power (CHP))— This option targets more efficient use of energy in heating and electricity demand through CHP. It aims to reduce GHG emissions by 33.1 million metric tons of carbon dioxide equivalent (MMtCO₂e) by 2025 at a cost of \$30 per ton of carbon dioxide equivalent (\$/tCO₂e) emissions avoided.

An MCCAG member asked if the cost numbers are net of the sale of excess heat or electricity by projects beyond what's needed for on-site activities. Bill Dougherty responded that they are. The member also asked whether the analysis includes the costs of government related to implementation mechanisms, such as costs for new capital equipment, energy transmission, and fuel for operation and maintenance, and whether they include the costs of incentives provided by the state. Tom Peterson responded that the calculations don't include the costs of incentives, which are considered to be zero. Tom added that the financing hasn't been segregated.

Another MCCAG member asked whether the numbers on generation are separate from the numbers being presented. Bill responded that the a stand-alone analysis was used, and that the introduction of new CHP is accounted for by overall system effects.

Another MCCAG member asked whether the percentage of the total for biomass takes into account that we've overachieved in the area of biomass. Bill responded that he has communicated with the AFW TWG to ensure that we don't exceed supply costs and, if we do, we will track the amount that would need to be obtained from out-of-state sources.

An MCCAG member asked if it was possible to consider the positive \$/tCO₂e amount and specify what the shortfall is and where the MCCAG needs to be. Tom Peterson responded that the shortfall will be presented at the next MCCAG meeting.

An MCCAG member asked if the TWG has developed an average cost per ton of the options on the table, so the MCCAG can be determined which options are above or below the average. Tom Peterson reminded the MCCAG of the decision criterion, which is to reduce potential emissions, and noted that there's no bright-line test to decide what's in or what's out. Another member commented on the potential benefits of seeing a list of positive-cost items, so the MCCAG can see the feasibility of options sector by sector, and recommended that the MCCAG reserve judgment until it has that information. Tom said that information is in the database and the TWG will provide it at the next meeting.

An MCCAG member asked whether the cost analysis took a macro approach. Bill Dougherty said that once decisions have been made on all of the options, the TWG will integrate them all in the cost analysis, which he considers to be microanalytical approach. However, the analysis won't include such macro elements as job losses or costs to industry. Tom Peterson noted that the cumulative cost impacts will be negative. The cost saving per ton is done on a primary cost basis. We don't typically don't (but can) do secondary cost analysis (e.g., jobs, value added, income) beyond costs and costs added. Randy Strait noted that the 2008–2025 cumulative cost savings would be \$9 billion. He doesn't have the cumulative cost per ton number yet, but estimated it would be in the range of –\$23. A member was skeptical about the \$9 billion savings, since achieving that will have associated costs. To present this option to the State Legislature without having worked out those details would be unrealistic.

RCI-6 (Non-Utility Strategies and Incentives To Encourage Energy Efficiency and Reduce GHG Emissions)—This option is a set of energy-efficient initiatives for industrial processes in manufacturing and commercial facilities that complement (but do not duplicate) utility-based programs to reduce GHG emissions. It aims to reduce GHG emissions by 8.3 MMtCO_{2e} by 2025 at a cost of –\$37/tCO_{2e} emissions avoided.

An MCCAG member noted that the analysis does not include the cost to Minnesota of providing tax incentives, but does include the cost of technical assistance to find more efficient ways to do things. Another member noted that quantifying the costs of tax incentives and other state-provided economic incentives is difficult.

RCI-7 (Conservation Improvement-Type Program for Propane and Fuel Oil Efficiency)—This option implements cost-effective programs to reduce the use of propane and diesel fuel, which are not energy efficient. It aims to reduce GHG emissions by 0.7 MMtCO_{2e} by 2025 at a cost of –\$28/tCO_{2e} emissions avoided.

Bill Dougherty noted that these numbers are being presented for the first time. An MCCAG member asked whether there is a number other than the summarized assumptions regarding this option. Bill said the option descriptions should list the data sources used to quantify the math and the key assumptions. Another MCCAG member noted that the page in the RCI policy option document where the assumptions were supposed to appear is blank. This information is missing for RCI-5 and RCI-7 through RCI-10 and will be corrected for the next meeting.

An MCCAG member asked whether agricultural use of propane and diesel fuel is included in the industrial and commercial sector numbers. Bill Dougherty responded that it's not specifically mentioned or included. It's a program to gain efficiencies in use. The TWG has a forecast for propane and diesel fuel use for 2005–2025. It assumed efficiency improvements of 80% for propane and 85% for diesel fuel. So they're implicitly included in the calculations. Randy Strait clarified that agriculture should be included in the industrial sector and aggregated with other industries.

RCI-10 (Support Strong Federal Appliance Standards and Require High State Standards in the Absence of Federal Standards)—Bill Dougherty clarified that the

numbers have not yet been fully quantified for this option. The preliminary numbers show that strengthening the standards for appliances will reduce GHG emissions by 15.3 MMT_{CO₂e} by 2025 at a cost of -\$91/tCO₂e emissions avoided. This option would strengthen Minnesota standards for appliances not covered by federal standards.

One MCCAG member thought the requirements of the fourth bullet and sixth bullets of the RCI-10 policy option description were unusual and warranted further discussion. A TWG member noted that since people have different tastes, the TWG wanted to leave this option flexible enough to allow people to choose their appliances. This wasn't a contentious issue in the group. Another TWG member noted that the additional costs of creating and maintaining an escrow account weren't considered, but retrofit costs were. One MCCAG member commented that the escrow and retrofit requirements would be hard on the poor, and that throwing away a working appliance would be foolish. A TWG member responded that getting rid of a working appliance actually makes sense because the energy-saving numbers are impressive.

Another MCCAG member asked whether the costs of achieving greater efficiency include the cost of implementing the option, such as consumer education costs. Bill Dougherty said the numbers include 10% for administration, and otherwise represent fuel costs.

An MCCAG member asked whether new provisions related to appliances were taken into account. Bill responded that the technologies included in this option are exclusive of recent federal legislation, so they'd be incremental.

A question was raised regarding the 190.1 figure in the chart for total recent actions. Bill agreed it should be 200.1 instead.

RCI Voting

Tom Peterson noted that we want to reach the highest level of consensus as possible, and anything less than unanimous will come back for final voting. Members proceeded with voting on the options, but some noted that they would like to revisit the numbers later, since they have not had enough time to evaluate them.

RCI-1b—The analysis for increasing the CIP from 1.5% to 2% was not ready for consideration by the MCCAG.

RCI-4—Approved without objections, with modifications as noted. The MCCAG agreed that additional analysis is needed to understand the costs related to achieving cumulative savings of \$9 billion. At the next meeting, the TWG will provide this information, along with a secondary cost-benefit analysis that includes impacts on health, jobs, etc.

RCI-6—Approved without any objections.

RCI-7—Approved without any objections.

RCI-10—Approved without objections, with the following modifications in the bullets under the policy option description: (1) remove “and major retrofits” bullet #4 and (2) delete bullet #6.

Energy Supply

Summary of Comments and Responses to Questions

ES-1, ES-3 through ES-8, ES-10, and ES-13 were presented for discussion. Four ES options have been moved: ES-2 (the fuel standard option) has been moved to the TLU TWG; and ES-9 (CHP), ES-11 (carbon tax), and ES-14 (cap and trade) have been moved to the C&T TWG.

ES-1 (Generation Performance Standard)—The TWG noted that this option isn’t ready for formal recommendation. The TWG disagrees on some avoided costs and assumptions.

A TWG member said the State Legislature has not authorized the Public Utility Commission to determine whether investing in the proposed Mesaba and Big Stone coal plants makes sense, considering they don’t include carbon capture technology. She suggested that the MCCAG question whether Minnesota should be building plants that increase GHG emissions and that produce energy Minnesota doesn’t need (i.e., the plants would be exporting electricity to other states).

An MCCAG member noted that biomass from the idle farmland around the proposed Big Stone construction site could provide 100 megawatts of power. That would make the plant carbon-neutral or even carbon-negative. Another MCCAG member asked if the state provides exemptions for the two plants. A TWG member replied that it would apply to plants already in the pipeline, but the TWG hasn’t had a final discussion on grandfathering plants.

One TWG member requested having a broader, philosophical consideration of whether moving to a properly structured (preferably national) cap-and-trade system, would be diverting our attention and efforts from a solution that’s more market based and less command and control. Another TWG member replied that some similar objections can be applied to every option, and that these options are about the costs.

ES-3 (Energy Efficiency Improvements, Repowering, and Other Upgrades to Existing Plants)—This is a biomass co-firing option at existing coal power stations that reduces GHG emissions by 33 MMtCO_{2e} by 2025 at a cost of \$17/tCO_{2e} emissions avoided. The TWG is waiting to see how this option works with cap and trade before determining its ultimate costs.

An MCCAG member observed that electric utilities typically look for cost-effective solutions, and asked what this option achieves beyond what utilities would be doing in its absence. One TWG member asked whether ES-3 would happen anyway within the C&T options. Another TWG member responded that you could apply that discussion to almost

all of the options, but not if you want the GHG reductions to be reasonably priced. The ES options are complementary to the C&T options, because the market won't achieve those reductions at the lower costs the ES options achieve. Tom Peterson noted that this isn't an either-or choice, Both ES and C&T options need to be pursued.

ES-4 (Transmission System Upgrading, Including Reducing Transmission Line and Distribution System Loss)—The TWG's numbers for this option for upgrading electrical transmission and distribution systems are too speculative to put before the MCCAG. Instead, the focus is on upgrading natural gas transmission and distribution systems, which would reduce GHG emissions by 4 MMtCO_{2e} by 2025 at a cost of –\$13/tCO_{2e} emissions avoided.

An MCCAG member commented that both ES-3 and ES-4 would accelerate actions that transmission and power companies would be doing on their own; therefore, it's important to know what implementation mechanisms the TWG is talking about for this option. Bill Dougherty responded that six options on the transmission side and one on the distribution side have been proposed for reducing methane leaks from natural gas transmission. Each of these options has been identified as being highly effective elsewhere in the country with limited information on cost. With regard to electricity transmission, the TWG found emergency technologies that would be impossible to consider in future upgrades, because most are not fully developed, and the costs are speculative. Therefore, the TWG is no longer trying to model improvements in electricity transmission, and wants to look at recent incentives for improving electricity transmission upgrades, removing disincentives, and changing out transformer capacitors.

ES-5 (Renewable and/or Environmental Portfolio Standard)—The focus of this renewable energy option is on integrating hydroelectric power as a percentage of total sales. It would reduce GHG emissions by 133 MMtCO_{2e} by 2025 at a cost of –\$13/tCO_{2e} emissions avoided.

One MCCAG member asked to clarify whether the goal is to move from the current 2% rate of renewable energy to 25% by 2025 or 50% by 2050. If the latter, he said the TWG needs to do the math on that option and report back to the MCCAG by the next meeting on January 24. Bill Dougherty clarified that the quantification of this option is based on the current Renewable Electricity Standard (RES) requirement in the Next Generation Energy Act (NGEA) of having renewable energy comprise 25% of total sales, even though the narrative talks about projecting the effects of achieving 50% of total sales by 2050. Assuming a constant rate of 25% would result in increased growth in renewable energy, provided sales increase.

A TWG member noted that as a result of recent meetings, the TWG has moved from an estimated cost of \$5.5 billion for this option to an estimated savings of \$1.5 billion. He raised questions about the avoided costs and was concerned that a number of major issues haven't been reviewed and the large savings haven't been vetted. Another TWG member disagreed, saying that the TWG has corrected the modeling and has provided countless opportunities for vetting the numbers.

Another MCCAG member asked whether this option should be included in the ES policy options because Minnesota has already adopted a renewable energy objective of 25% by 2025. Tom Peterson clarified that the State Legislature charged the MCCAG with quantifying the impacts of existing actions, and this analysis has been completed.

ES-6 (Nuclear Power Support and Incentives)—This policy option provides support and incentives for extending the life of existing nuclear power plants and studying the potential for new nuclear power plants in Minnesota. It would reduce GHG emissions by 48 MMtCO_{2e} by 2025 at a cost of \$70/tCO_{2e} emissions avoided.

A TWG member suggested that it would be appropriate to extend the Minnesota 2020 target for nuclear power to 2025. Bill Dougherty responded that the TWG decided to keep the 2020 figure because of the difficulties and uncertainties about 2025 assumptions. He added that if the TWG decides to move to 2025, the numbers for this row on the chart will be zeroes—no GHG emission reductions, no costs, no cost-efficiency numbers to report. If the TWG projects this option to 2050, the chart will show GHG reductions.

Another TWG member commented that the TWG hasn't developed final recommendations for this option, and it shouldn't be assumed that the TWG is recommending no new nuclear plants.

ES-7 (Advanced Fossil Fuel Technology Incentives, Support, or Requirements)—This policy option would lead to incremental growth in GHG emissions because it could replace natural gas-fired units with advanced coal technology. It would increase GHG emissions by 22 MMtCO_{2e} by 2025 at a cost of -\$162/tCO_{2e} emissions added.

Tom Peterson asked the TWG for clarification regarding whether the negative numbers mean this option would increase emissions. Bill Dougherty responded they would, but only if considered in the context of current dispatch protocols. The introduction of integrated gasification combined cycle (IGCC) technology would displace natural gas generation. However, a comparison of the required changes to GHG emissions from existing coal units would result in GHG reductions. He added that the -\$162/tCO_{2e} of increased GG emissions is confusing and recommended deleting it and replacing it with “not applicable.” The TWG agreed.

A TWG member commented that this option should be deleted from the list of recommendations because the TWG shouldn't recommend increasing emissions at a cost of \$3.5 billion.

ES-8 (Carbon Capture and Storage and/or Reuse Policies)—The analysis for this option includes an 86% efficiency penalty. This policy would reduce GHG emissions by 18 MMtCO_{2e} by 2025 at a cost of \$84/tCO_{2e} emissions avoided.

Tom Peterson asked whether ES-8 is contingent on ES-7. The TWG responded yes, and clarified that the group considered them separately, but from a GHG emission perspective, decided it should consider them together. Bill Dougherty added that

integrating the two options would result in one IGCC unit with 600 megawatts of carbon capture and storage.

An MCCAG member commented that this option can be applied to any carbon-based fuel. Princeton University proposed that it be used with a mix of coal and biomass or just biomass. He asked whether this option considers only coal, or whether it should be expanded to include biomass. Bill Dougherty responded that's an amenable improvement. A 100% carbon reduction might be achieved with ITC with 8% biomass, through design construction, etc. These plants would become carbon negative.

Another member noted that no analysis has been done on piping carbon dioxide to North Dakota. He also asked whether any analysis has been done on transporting GHG emissions from power plants to their ultimate storage site.

ES-10 (Voluntary Reduction Targets)—There were no clarifying questions about or discussion of this option.

ES-12 (Distributed Renewable Energy Incentives and/or Barrier Removal)—This option was not presented because the cost analysis is not yet completed. Nevertheless, it was noted that preliminary analysis shows the reductions to be smaller than those of the other ES options.

ES-13 (Technology-Based Approaches, Including Research and Development Fuel Cells, Energy Storage, and Distributed Renewable Energy Technologies)—There were no clarifying questions about or discussion of this option.

ES Voting

ES-1—Further analysis is needed.

ES-3—Approved without objections, with clarifications and text changes as noted. The TWG will have an additional meeting and a substantial policy discussion on this option, including a specific conversation about integration with C&T.

ES-4—Approved without objections, with modifications as noted. The MCCAG wants the text to explicitly note that the numbers include only natural gas transmission and not electricity transmission.

ES-5—No objections to moving forward as a final recommendation.

ES-6—Further analysis is needed.

ES-7 and ES-8—These options should be combined. Further analysis is needed on expanding the biomass numbers to include other biological carbon sources, such as pulverized coal IGCC, which includes carbon capture.

ES-10—No objections to moving forward as a final recommendation.

ES-12—Further analysis is needed.

ES-13—No objections to moving forward as a final recommendation.

Transportation and Land Use

Summary of Comments and Responses to Questions

Will Schroeer explained that four options would be presented to the MCCAG for consideration: TLU-1, TLU-2, TLU-4, and TLU-9. The analysis for TLU-6 (Adopt California Clean Car Standards) is being revised because of new CAFÉ standards. Also, more work is being done on the remaining pending options.

Minnesota VMT Projections

Before the four options were presented, the TLU TWG presented revised projections for baseline vehicle miles traveled (VMT), and recommended that the MCCAG approve their use. Extensive discussion followed. Will Schroeer explained that during the week of December 21, 2007, the Metropolitan Council (MC) and Minnesota Department of Transportation (MnDOT) traffic modelers agreed on new projections for statewide VMT. These new projections are substantially lower than the projections that CCS and the MCCAG have been using throughout the process. Using the new projections in the MCCAG process will substantially change both the baseline the TLU TWG has been using, and the calculated emission reductions of policy options off of that baseline. The TLU TWG needs MCCAG approval before making any changes to the Inventory and Forecast. The TLU TWG recommended that the MCCAG approve this change to the Forecast.

Will Schroeer further explained that, rather than the previous projected growth rate of 2.1%, MnDOT and MC decided that 0.9% a more likely annual VMT growth rate statewide. They based this estimate on a projection of 0.8% growth in the metro area and 1.1% growth in the non-metro area. Adopting the new projections would reduce baseline transportation emissions by roughly 5 MMtCO₂e in 2025.

One MCCAG member was concerned about altering the analysis, because no explanation was provided for the projected reduction in VMT, except perhaps for a spike in gas prices. He noted that when gas prices spiked in the 1970s, VMT continued to grow. The MCCAG has no basis to assume VMT will flatten out in the next 20 years. This is very important because if the MCCAG assumes VMT will flatten, Minnesota won't act to reduce GHGs from vehicles as aggressively as necessary. He suggested that one alternative would be to examine both scenarios.

One TWG member responded that the TWG doesn't have a strong argument to counter the MnDOT numbers. Another TWG member suggested asking MnDOT for a list of the assumptions it used to derive its projections, and to ask whether the revised projections will result in changes in the MC's and MnDOT's plans. An MnDOT representative explained that MC used demographic, employment, housing, and population trends to arrive at the 0.8% annual VMT growth projection for the metro area. However, similar

information isn't available for the non-metro area (outstate Minnesota), so the 1.1% was based on the higher population growth rate there. A few TWG members noted that the TWG has been using MC/MnDOT data before, so it should use the revised numbers now, and if this is an anomaly, the TWG can revisit the numbers during the implementation phase.

Tom Peterson asked how many options will be affected by the revised numbers. The TWG responded that all of them would, except for TLU-11. Will Schroer explained that the TWG was presenting four options (TLU-1, TLU-2, TLU-4, and TLU-9) for the MCCAG's consideration because they are sound, even if the VMT number shrinks.

TLU-1 (Improved Land Use Planning and Development Strategies)—This option envisions more compact, mixed-use development that would reduce the distances between home, work, and play. Will Schroer noted that the MC was concerned that focusing new growth on already-developed areas might be overly ambitious and not readily achievable. MC prefers to do nothing over the baseline, because it thinks that is as aggressive as development policies can be. There was no further discussion of this option.

TLU-2 (Expand Transit, Bicycle, and Pedestrian Infrastructure)—This option offers transportation alternatives to single-occupancy driving. One member noted that implementing the 2020 goals 10 years sooner will cost \$210 million a year for 13 years. Another member asked whether the TWG has looked at off-road and marine fossil fuel consumption. The response was that these two GHG sources weren't among the top 10 policies that the MCCAG asked the TWG agreed to focus on, and added that their emissions are insignificant and difficult to calculate. There was no further discussion of this option.

TLU-3 (Low GHG Fuel Standard)—One MCCAG member was concerned that this option wasn't put before the MCCAG for consideration. He noted that the option focuses on reducing GHG intensity through biofuels, rather than through existing fuels, and that Minnesota is getting a lot of petroleum from Canada. Another MCCAG member indicated concern about how best to implement this option. There's a lot to consider, such as resources from oil from tar sands and lots of countries would be affected. Will Schroer noted that the TWG would consider these comments and welcomed the commenters to participate in the next TLU TWG meetings.

TLU-4 (Infrastructure Management)—This option offers a set of tools to get the most out of the existing infrastructure, including intelligent transportation systems, real-time message boards, improvements in engine efficiency, and integration of transit systems. One TWG member raised the issue of whether people will be encouraged to drive more if congestion decreases.

TLU-5 (Climate-Friendly Transportation Pricing)—Will Schroer explained that the TWG has quantified the pay as you drive (or save as you don't drive) element of the option. However, the TWG couldn't reach consensus on how to quantify other ranges of

reductions that might arise. A representative from the insurance industry noted that this option has implication for insurance and offered to provide input as needed

TLU-6 (Adopt California Clean Car Standards)—Will Schroeer explained that the new CAFE standard sets a 2020 target of 35 miles per gallon (mpg) for fleetwide new vehicles. That law became part of the TLU baseline, and sets complicated procedures for determining what each fleet contributes to the target. He noted that the U.S. Environmental Protection Agency (EPA) denied California’s request to set its climate standards higher than the national standards. As a result, the TLU baseline for more efficient cars will fall, along with the benefits from the previous forecast for 2006. The TWG hasn’t incorporated the California Air Resources Board’s analysis into its current numbers, but will do so for the next meeting. One MCCAG member reported that Minnesota will join 16 other states in challenging EPA’s denial of California’s request for a waiver from the federal standards.

Will continued to explain that because the TWG cannot reach consensus on this option, it has agreed to present to the MCCAG a formal policy option document that will represent the TWG’s best effort, along with two 2-page documents containing the auto industry’s and the environmental community’s explanations of why the TWG cannot reach consensus. Tom Peterson requested that the 2-pagers clearly articulate the barriers to consensus.

One MCCAG member noted that this option emphasizes liquid-fuel vehicles, which is realistic for 2015 and probably for 2025, but other types of vehicles are possible by 2050. He asked the TWG what can be done to encourage the production of IGCC electric vehicles and coordinate this effort with carbon-neutral or -negative electricity generation using renewable fuels. Will Schroeer responded that TLU-3 anticipates this scenario, and explained that the recommendation here is to develop low-GHG standards, and all of the TLU options have the opportunity to include plug hydro, electric, etc.

TLU-7 (“Fix-it-First” Transportation Investment Policy and Practice)—This option was not presented for the MCCAG’s consideration because further analysis is needed. The TWG will present it to the MCCAG for voting at the final Meeting #8 on January 24, 2008.

TLU-9 (Workplace Tools To Encourage Carpooling, Bicycling, and Transit Ridership)—This option would reduce emissions by requiring certain employers and encouraging other employers to offer a Commuter Benefits program at the workplace to increase employees’ use of transit, ride-sharing and non-motorized transportation. There were no clarifying questions or discussion of this option.

TLU-11 (Truck Stop Electrification)—This option was not presented for the MCCAG’s consideration because further analysis is needed. The TWG will present it to the MCCAG for voting at the final Meeting #8 on January 24, 2008.

TLU-12 (Mobile Source Emissions Reduction)—This option was not presented for the MCCAG’s consideration because further analysis is needed. The TWG will present it to the MCCAG for voting at the final Meeting #8 on January 24, 2008.

TLU-13 (Reduce Maximum Speed Limits)—This option was not presented for the MCCAG’s consideration because further analysis is needed. The TWG will present it to the MCCAG for voting at the final Meeting #8 on January 24, 2008.

TLU-14 (Freight Mode Shifts: Intermodal and Rail)—This option was not presented for the MCCAG’s consideration because further analysis is needed. The TWG will present it to the MCCAG for voting at the final Meeting #8 on January 24, 2008.

TLU Voting

TLU-1—No objections to proceed as final recommendation.

TLU-2—No objections to proceed as final recommendation.

TLU-3—Further analysis is needed.

TLU-4—No objections to proceed as final recommendation.

TLU-5—Further analysis is needed.

TLU-6—Further analysis is needed.

TLU-7—Further analysis is needed.

TLU-9—No objections to proceed as final recommendation.

TLU-11—Further analysis is needed.

TLU-12—Further analysis is needed.

TLU-13—Further analysis is needed.

TLU-14—Further analysis is needed.

Agriculture, Forestry, and Waste Management

Summary of Comments and Responses to Questions

The TWG clarified that AFW-1, AFW-2, AFW-4, AFW-5, and AFW-6 have been resolved, and that AFW-3, AFW-7, and AFW-8 are being presented for the MCCAG’s consideration. A TWG member noted it is critical that the TWG clearly articulate feasibility issues and key uncertainties so that policy makers can understand the ramifications of these options.

AFW-3 (In-State Liquid Biofuels Production)—Element A. Ethanol Carbon Content: Steve Roe explained that the TWG developed additional information on the capital costs and other associated operational costs to the ethanol industry (e.g., ash disposal) for switching to renewable fuels.

A TWG member suggested adding language on woody biomass, so the option is not based solely on agricultural biomass. Another TWG member clarified that the woody biomass would come from agricultural forestland (woody biomass from ag lands that were once forested areas) and not from Minnesota's existing 16 million acres of forestland.

Elements B & C (Fossil diesel and gasoline displacement): One MCCAG member objected to the adoption of this option because he thinks it needs to be examined with TLU-3 (Low GHG Fuel Standard). Steve Roe added that CCS assumes 100% overlap in the benefits associated with Elements B&C and the consumption of these fuels under the LCFS of TLU-3. A TWG member explained that biofuels is a subset of low-carbon fuels, and added the biodiesel number seems high and that issues remain regarding assumptions for new versus conventional sources of electricity (the latter comment directed at Element A).

An MCCAG member cautioned that the TWG should make sure that displacing gasoline with ethanol truly reduces the carbon footprint. Another MCCAG member questioned the feasibility of achieving the target of offsetting gasoline consumption by 50% by 2025, when the industry thinks a 20% target is a stretch. He added that the costs and feasibility of cellulosic ethanol are unknown, and the option raises several questions, such as how many acres is the TWG talking about, when are new production facilities coming on line, and what vehicles will burn the ethanol. Another MCCAG member seconded those concerns. A TWG member responded that ethanol producers think the 50% target is a stretch as well, but perceive it as a goal to aspire to.

Steve Roe explained that the policy option should be thought of as including all bio-based fuels, which could be used to support a LCFS in MN (ethanol and biodiesel are used as examples to estimate potential reductions and costs). The net benefits of such displacement are 18–20% for starch-based ethanol and 80% for cellulosic ethanol. The benefits for the gasoline displacement goals assume cellulosic ethanol or other feedstocks/technologies that could produce similar GHG reductions. An important assumption is that commercial-scale cellulosic ethanol production technology will be demonstrated within the policy period. Regarding ethanol consumption, lots of vehicles may use high-ethanol fuel, but the TWG believes the 50% target is achievable overall (this is actually a demand-side consideration that should be addressed in the LCFS).

An MCCAG member asked where the additional land for biomass will come from. He noted that the cost assumptions are flat and that the topic is complex and needs to be looked at holistically. Another MCCAG member asked whether the TWG has considered that Minnesota will be displacing food production with the production of biofuels and bioproducts. Another MCCAG member noted that the price of corn has doubled because of demand for converting corn to energy, and that this spike has affected food prices.

Steve Roe responded these are important points to address. Although the AFW TWG options include some purpose-grown energy crops, the overall acreage is modest. Also, the ethanol production promoted by the TWG is for cellulosic (not corn-based) ethanol. He did agree that the TWG needed to do additional follow-up work to quantify the available biomass resources in the state and the potential demands for this resource across all MCCAG options (this will be included in the next version of the AFW POD).

AFW-7 (Integrated Waste Management) and AFW-8 (End of Use Waste Management Practices)—These two options, which represent systems approaches to waste management, were discussed together. There was a general misunderstanding about what was meant by the term “Plan B” for waste management under AFW-8. Plan B as discussed during the previous TWG meeting was meant to characterize the benefits and costs for implementing AFW-8 in the absence of AFW-7 (e.g. assuming that AFW-7 was not recommended by the MCCAG or that AFW-7 largely failed during implementation). In CCS’ revisions to the AFW POD, “Plan B” is referred to in the “stand-alone” estimates of reductions and costs (these are included in both the summary table at the front of the POD and in the AFW-8 quantification section. In the previous version of the POD, CCS did not present these stand-alone estimates, but just the incremental benefits of adopting AFW-8 on top of AFW-7.

One CCAG/TWG member had a different understanding of what was meant by “Plan B”. This member indicated that it should be based on a policy design incorporating waste to energy (WTE) and landfilling goals from the MPCA strategic plan. Mr. Roe explained that the TWG does not have the authority to explore and quantify alternative policy designs that have not been reviewed and approved by the CCAG. There was extensive discussion regarding whether the TWG should move forward with recommending AFW-7, and whether new modeling was needed for AFW-8.

Several TWG members supported moving forward with AFW-7. One noted that these are realistic goals based on current practice and program planning in Washington, Oregon, and California, the European Union, and Ontario.

Other TWG members believe AFW-7 and AFW-8 are so closely linked that the TWG should move forward with both of them as a whole. They noted that one AFW-7 element (source reduction) is a policy option on which the other waste option elements are based. They also noted that societal and behavioral changes at the residential, business, and manufacturer levels and policy changes at the federal level are so intertwined that to move forward with each singularly would be a mistake. An MCCAG member suggested combining AFW-7 and AFW-8 into one option/proposal for Plan B, with the numbers showing AFW-7 as being aggressive and the consequences of not achieving its goals.

[CCS notes that the current construction of the AFW-7&8 options could be viewed as a single option, since the incremental analysis under AFW-8 picks up where AFW-7 ends; this current construction represents the way in which the TWG felt that the waste management sector should be approached to achieve maximum benefits; AFW-7 is focused on waste minimization and diversion, which produces the highest benefits at the

lowest societal costs; AFW-8 is designed to address the remaining waste in the most GHG-preferential manner].

One TWG member noted that AFW-7 has been characterized as not being aggressive enough, while AFW-8 is too aggressive. Another TWG member responded that the AFW-7 goal to move from the current 1.9%/year/capita increase in waste generation rate, to a 0%/year/capita increase in waste generation rate by 2020, and to 3%/year/capita decrease in waste generation rate by 2025 is unrealistic, and calls for more analysis for “Plan B” (meaning an alternative design goal for AFW-7).

AFW Voting

AFW-3—As a result of the discussion noted above, 18 members objected to moving forward as a final recommendation. Most of the objections were within the TWG. They concerned (1) limited time and analytical resources, (2) extremely volatile commodity prices, and (3) the target of offsetting gasoline consumption by 50% by 2025. The TWG will examine these questions and report back at the final meeting.

AFW-7—As a result of the discussion noted above, 18 members objected to moving forward on this option as a final recommendation.

AFW-8—As a result of the discussion noted above, 18 members objected to moving forward on this option as a final recommendation.

Cross-Cutting Issues

Summary of Comments and Responses to Questions

The TWG recommended adopting all options for final recommendation, except for CC-2 and CC-10, which will be revisited at Meeting #8.

CC-1 (GHG Inventories, Forecasting, Reporting, and Registry)—One MCCAG member asked for clarification about the registry discussed. The response was *The Climate Registry*, which Minnesota is already participating in, so it’s business as usual.

CC-2 (Statewide GHG Reduction Goals and Targets)—Goals and targets need additional analysis.

CC-3 (State and Local Government GHG Emissions (Lead-by-Example))—No comments.

CC-4 (Public Education and Outreach)—No comments.

CC-7 (Participate in Regional and Multistate GHG Reduction Efforts)—No comments.

CC-8 (Encourage the Creation of a Business-Oriented Organization To Share Information and Strategies, Recognize Successes, and Support Aggressive GHG Reduction Goals)—No comments.

CC-9 (Dedicate Greater Public Investment to Climate Data and Analysis)—No comments.

CC-10 (Facilitate the Development of an Effective Carbon Credit System for MN)—
This option needs to be revisited and considered in relation to C&T.

CC Voting

CC-1—No objections to adoption as a final recommendation.

CC-2—Needs further analysis.

CC-3—No objections to adoption as a final recommendation.

CC-4—No objections to adoption as a final recommendation.

CC-7—No objections to adoption as a final recommendation.

CC-8—No objections to adoption as a final recommendation.

CC-9—No objections to adoption as a final recommendation.

CC-10—Needs further analysis.

Cap and Trade

Summary of Comments and Responses to Questions

C&T-1 (Cap-and-Trade Program)—This option is a long series of different design scenarios and modeling results. The scenarios vary by geographic region and represent a wide range of options related to modeling resources.

The former C&T-2 (Minnesota-Only C&T) and C&T-3 (National C&T) have been incorporated into C&T-1, which is now focused on regional coverage of states in the Midwest Governors Association (MGA) so as to provide consistency with a national cap-and-trade system.

Tom Peterson explained that all of the policies and measures discussed need to be fully integrated with the C&T policy options. The TWG agrees on the pollutants covered, but not on the cost mechanisms. There are two basic models: (1) free distribution to covered sources on some basis, such as historical emissions (grandfathering), or (2) auction at the market price, requiring covered sources to purchase the allowances.

One TWG member recommended that the TWG look at MGA and pursue trading arrangements with other regions—full linkage issues. Other TWG members disagreed,

saying that the people directly affected by the policy option should be included, but those indirectly affected should not.

A TWG member said a roll call decision on energy generation facilities favored including large industrial boilers, transportation fuels and fossil fuels for residential and commercial use. Two TWG members dissented on the issue of natural gas for residential and commercial use, and said their reasons will be noted in the text of the policy option description.

Another TWG member noted that the draft text of changes to the policy option descriptions wasn't in the draft distributed for the meeting. Some issues in the draft might look like the TWG agrees, but that isn't necessarily the case. The TWG hasn't yet debated the need for flexibility in cost-containment mechanisms or distribution of allowances.

Another TWG member said it's important for the MCCAG to watch for big differences in cost-effectiveness and cost per ton of carbon emissions reduced and the marginal price per ton. How the MCCAG facilitates policy formation can make a big difference. Minnesota has chosen to be a permanent purchaser of, rather than a seller, of allowances.

Extensive discussion then commenced on a Minnesota-only cap-and-trade program versus regional and national programs. Most TWG members support a regional application, but many think the better answer is a national plan to avoid leakage issues and economic competitiveness among regions. A TWG member noted that lots of large companies favor a national policy, and added that MGA is working on a regional plan that would provide a practical framework. Another TWG member noted there may be some disadvantage to a regional cap-and-trade program because some that sectors and sources are unique to Minnesota may be overshadowed, the regional program may be at odds at with what a national program, and by the time Minnesota decide on a regional program, a national program may be underway. Minnesota would clearly be worse off being an observer state, as opposed to participating with MGA partners.

Another TWG member agreed that timing is important. He asked how long would it take to get to a regional program, and whether there is value in developing a system similar to those developed by other regions. He noted that Minnesota might have a more prominent seat at the table when a national program is being formed. It's not inconceivable that Minnesota could have a regional program by the end of the decade, but a federal program won't be up and running until 2012–2014. That's a valuable carbon capture timeframe to lose that is critical to global warming, so moving ahead early makes sense. Another TWG member agreed, and noted that the state legislature asked the MCCAG to give cap and trade its best effort, so he is uncomfortable waiting for a federal program.

Adam Rose next summarized the TWG's modeling efforts. They found that Minnesota can achieve its GHG cap-and-trade reduction goals at lower cost through a Midwest regional approach, as opposed to a Minnesota-only configuration. The modeling results from joining other groups, such as the Western Climate Initiative, show a slight advantage over the regional approach. However, there's a question regarding whether

those small gains are worth the necessary additional outreach and negotiations. The modelers set high and low estimates of \$46 and \$40/tCO₂e reduced, and split the difference to arrive at \$43/tCO₂e reduced.

The timeframe for a cap-and-trade program was then extensively discussed. A TWG member said it is important for context to note that the cost curve is a mainstay work tool for cap and trade. The options presented by the various TWGs have exhausted the 2025 target. So he recommended that the MCCAG resolve to carry the C&T options forward in that timeframe. An MCCAG member asked whether the TWG will arrive at a total tonnage reduction net present value for 2008–2025. Adam Rose responded that the TWG will do that, but is waiting until the MCCAG decides on a specific configuration (e.g., MGA and Minnesota), because it will involve multiple emission projections for each year.

One TWG member has wrestled with how the C&T options relate to the other policy options, and noted that some of them seem to be one and the same. The capital market wants an unfettered cap-and-trade program. A regulatory framework will create greater uncertainty and diminished value.

Tom Peterson clarified that the working group is not recommending action on this policy option and noted that today's discussion was to make sure the MCCAG clearly understands the policy design issues involved. C&T-1 and the other C&T options need more discussion and will be presented for decisions at the next meeting on January 24.

C&T-4 (Carbon Tax)—This option was not presented for the MCCAG's consideration because further analysis is needed. The TWG will present it to the MCCAG for voting at the final Meeting #8 on January 24, 2008.

C&T-5 (Market Advisory Group)—This option was not presented for the MCCAG's consideration because further analysis is needed. The TWG will present it to the MCCAG for voting at the final Meeting #8 on January 24, 2008.

C&T-6 (Regional and Multistate GHG Reduction Efforts)—This option was not presented for the MCCAG's consideration because further analysis is needed. The TWG will present it to the MCCAG for voting at the final Meeting #8 on January 24, 2008.

C&T-7 (Carbon Credit System for Minnesota)—This option was not presented for the MCCAG's consideration because further analysis is needed. The TWG will present it to the MCCAG for voting at the final Meeting #8 on January 24, 2008.

Inventory and Forecast

Summary of Comments and Responses to Recommended Revisions to I&F

Bullet #1—ES/RCI: Electricity Sales Forecast (2005–2025)

Bill Dougherty pointed to the effects of recent CIP legislation on electricity sales. He said the post-CIP was estimated originally at 0.5% per year; it is now estimated to be 0.82% per year. This is very different from what we had been using.

An MCCAG member asked whether a vote is being recommended and noted that the MCCAG hasn't reached consensus on several issues, such as whether ethanol plants will be integrated into this estimate. Bill Dougherty responded that they need to be integrated to account for electricity and fuel use.

Tom Peterson suggested that for the final I&F report, the TWG agree to articulate the different views among the members and to note that the assumption could be lower or higher.

Another MCCAG member asked Bill Dougherty whether the 0.82%/year number is driven by raising the earlier number up or whether something else is going on. Bill responded that 10 years is a reasonable period. The 2.04%/year actual growth rate should be factored in.

An MCCAG member asked if the ES/RCI electricity sales forecast is consumption-based versus revenue-based. Bill responded that it is consumption-based.

Tom Peterson asked whether there were any objections to the first I&F bullet. An MCCAG member suggested doing a sensitivity analysis around this in both directions to determine definitively whether the number could be higher or lower. Tom responded that carrying cumulative numbers statewide through the entire system is complex and would be a tremendous challenge, given the timing of the process and the use of information later. Another MCCAG member said that the TWG has spent countless hours getting the majority of the committee to agree, and like any project, this can be revisited 5 years down the road. Another MCCAG member noted that the MCCAG should have the same protocol for dealing with inventory overall. Tom Peterson responded that a CC option includes continuous updating of analytical work to address assumptions across the board.

Bullet #2—TLU: VMT Forecast (2005–2025)

The TWG recommends revising the annual growth rate for the vehicle-miles traveled (VMT) forecast from 1.9%/yr to 0.8%/yr based on an analysis of Minnesota VMT data by the Metropolitan Council and Minnesota DOT traffic modelers. The MCCAG was in agreement with this recommendation. A point of clarification was discussed regarding the MCCAG's decision to approve several of the TLU options for which quantification was conducted using the original forecast. Will Schroer explained that those four options are sound, even if the VMT number shrinks. It was suggested that the TWG consider the new forecast going forward for the remaining policy options and to inform the MCCAG if it finds that the quantification of the options approved by the MCCAG today would be substantially affected by the new forecast.

I&F Voting

Bullet #1—No objections, provided there is continuous updating of analytical work to address assumptions across the board.

Bullet #2—No objections to referring this item back to the TWG and proceeding on the basis that final resolution is needed.

Tom Peterson asked if there are any other revisions to the I&F for the MCCAG to consider; Randy Strait responded no. Tom Peterson asked if there were any objections by the MCCAG to approving the I&F; there were no objections.

Attachment

Members of the Public Attending MCCAG Meeting #7

St. Paul, Minnesota

January 10, 2008

Name	Company
Bill Black	Minnesota Municipal Utilities Association
Jeanette Blankenship	Minnesota Housing
Tim Brownell	Eureka Recycling
Mike Cosnia	Minnesota Power
Doug Carnival	McGrann Shea Anderson Carnival Straughn & Lamb
Len Champi	Northland Securities
Allen Dotson	Minnesota Pollution Control Agency
Briane Draxten	OTP
Lisa Frenette	Builders Association of Minnesota
Stacey Fuji	Great River Energy
Darrell Gerber	Clean Water Action
Karin Halt	
Jake Hamlin	Cargill
Jerry Hinderman	
Susan Hubbard	Eureka Recycling
Rebecca Kenow	Flint Hills
Rebecca Klett	Lockridge Grindal Nauen
Kirk Kowdelka	Minnesota House
Mike Kuhczyk	
Andrew Chilseth Leonard	Street and Deinard
Yolanda Letnes	Minnesota Pollution Control Agency
Nick Mark	CPE
Bill McAuliffe	Star Tribune
Kathleen Micheletti	Excelsio Energy
Mike	Great River Energy
Jenny Myers	Minnesota Senate
Richard Newmark	Minnesota Audubon
Michael Noble	Fresh Energy
Peter Nussbaum	University of Minnesota
Andy Pomroy	Minnesota House
Michelle Rosier	Sierra Club
Carl Samulson	LCPPM
Bruce Saylor	Connexus Energy
Alyssa Schlander	
Diane Schmidt	Flint Hills
Darlene Sliwa	Minnesota Senate Counsel and Research
Bret Smith	Sierra Club
Gary Stewart	
Lee Sundberg	Minnesota Rural Electric Association
Jim Turnure	Xcel Energy
Princesa VanBuren	Minnesota Environmental Quality Board
Jean Wagnius	State Legislature
Win Watts	University of Minnesota Department of Mechanical Engineering