

**ROBERT HITCH [GEORGIA TECH] NOTES FROM:
SCHEDULED MEETINGS AND SEMINAR
FOR ORNL / U.S. DEPARTMENT OF ENERGY
Astana, Kazakhstan, August 31-September 3, 2010**

Travel 29 & 30 August 2010

Tuesday, August 31

- 1030 Depart RIXOS hotel for US Embassy, Kazakhstan
Briefing with involved parties on logistics of meetings for the afternoon and final discussion of the US role in the Energy Seminar
- 1415 Depart the Embassy for the Ministry of Industry and New Technologies.
- 1500 Meet with Zhakyp Bokenbayev, Director of Electricity and Coal Industry Department (covers electric power and renewable energy), Ministry of Industry and New Technologies
*Location: 47 Kabanbay Batyr Avenue
POC: Raigul Bulekbayeva (Renewable Energy Expert), ph. +7 (7172) 241 810, bulekbaeva@mit.kz, Kairat Rakhimov (Chief Renewable Energy Expert), ph. +7 (7172) 241 418, krb85@yandex.ru
DOE Participants: Jim Quinn, Riyaz Papar, Robert Hitch, Lori Bird, Donna Heimiller, Michael Cohen
Embassy Participants: Kevin Covert, Laura Smiley, Kuralay Omarova
Status: Confirmed
Notes: This Ministry was only recently split from the Gas and Coal ministry. Discussion was held on the sequential vs. simultaneous translation of remarks during the conference, and the need for additional meeting space. It was decided to present the Energy Efficiency day 1 afternoon session at the US Embassy, US to provide simultaneous translation. Calculators were requested for day 2 EE sessions – not available. There was discussion of leader selection for exercises – to be determined at the session. Kazakhstan has a law concerning use of renewable energy sources. A law on energy efficiency was returned from the legislature for rewrite & will be sent back for consideration in a month or so.*
- 1600 Depart for the Kazakhstan Housing and Utilities Reform Center.
- 1630 Meet with Talap Rakhmanov, Deputy Chairman, Damir Yegizbayev, Deputy Chairman, and Aiman Shopayeva, Director, Department of Energy Efficient Technologies, Kazakhstan Housing and Utilities Reform Center, Agency for Construction, Housing, and Utilities.
*Location: 29 Syganak Street, Business Center “Eurocenter Astana”, 10th floor
POC: Aiman Amanovna, ph. +7 (7172) 796 411, Asema, ph. +7 (7172) 796 400, asemakad@mail.ru
DOE Participants: Jim Quinn, Riyaz Papar, Robert Hitch, Lori Bird, Donna Heimiller, Michael Cohen
Embassy Participants: Kevin Covert, Laura Smiley, Kuralay Omarova
Status: Confirmed
Notes: This ministry has been established only recently. They have a draft program to encourage energy savings, mostly gas used in comfort heating. This will be presented to the Minister in a few weeks with a conference scheduled to roll-out the program & help raise awareness before the heating season begins. They are partnering with a US company, AIEON,*

and wish to determine benchmarks for an energy performance indicator in residences. They believe energy consumption per area of residence to be high compared to Russia, but need to do more measurements. Discussion ensued about who pays for modifications to private residences [for energy efficiency] in the US. Topics were: Pay for performance, low cost loans, ESCOs, and refundable assistance. We also talked about passive and active solar and district heating systems with CHP. Kazakhstan is interested in possible incentives [credits, rebates] for residents & how to insure compliance. We discussed the US experience with LEED – EE is more related to how the equipment is used [operation controls] than the basic efficiency of the construction.

1730 Depart for the Rixos Presidential Hotel.

Wednesday, September 1

0900 Walk to Ministry of Industry and New Technologies, 1st floor, Conference Hall
1030 Opening Session: Kazakhstan Renewable Energy and Energy Efficiency Seminar
Welcome by Vice-Minister Duisenbai Turganov, Ministry of Industry and New Technologies. *Notes: Increasing consumption of energy affects carbon emissions. The goal is for renewable sources to comprise 1% of energy consumption by 2015. Energy efficiency improvements are the quickest way to find new sources of energy for growth of GDP. Targets for reduced energy intensity are; buildings, construction, and industry. Regulations and incentives are being considered to assure energy efficiency. They wish to learn from US experiences.*

Review of US Energy Policy and Bilateral collaboration – Richard Hoagland, US Ambassador. *Notes: Energy from fossil fuels alone is not sustainable. Energy efficiency and renewables are both needed to reduce costs and fight climate changing emissions.*

Review of Energy Efficiency on Kazakhstan – Serkibol Azhenov, Deputy Director Department of New Technologies. *Notes: Kazakhstan's commitment to the Kyoto Accords is a 15% reduction in green house gasses. Water, wind, photovoltaic, and geothermal energy will account for 1 Tera KW hours. Wind will be 920 BKWH mostly in the perimeter mountains. Hydro will be 8BKWH in the southern areas. Solar PV and Hot water will contribute the remainder distributed around the country. This is all supported by the new law on renewable energy.*

US Experience in energy efficiency and renewables – James Quinn, US DOE

TOO Institute Kazakhstan, current energy situation; *Notes: Natural fuels in use now are 70% coal, 11% natural gas, and 4% propane. Growth in Energy consumption is expected to be 40% by 2030. Kyoto carbon limits will be met by 2018 or sooner at current rates-after that Kazakhstan must buy credits to continue to grow. Renewable sources and energy efficiency need 10 to 50% improvement during the period. They are considering such technologies as biomass pellets and compressed briquettes- the ash will contribute fertilizer for agriculture.*

1230 Lunch with Opening session speakers

1330 US Embassy meeting room, Energy Efficiency topics

Quinn, Paper, & Hitch presentations are on file. *Notes: Discussion was lively. Attendees wanted to understand how the US Voluntary standards and programs could be applied in Kazakhstan. Attendees discussed some mechanism that may take the form of 3rd party verification of ISO50001 and GSEP compliance. In general, financial incentives alone were considered too weak to assure energy intensity reduction. The potential new law would be the format requiring intensity reduction. Attendees were interested in finding a common measure to apply to all energy users in the country. It was mentioned that EnPI [energy performance indicators] could be unique to each energy user, then a percent of improvement in the EnPI could be a common measure.*

Thursday, September 2

0900 Day 2 Energy Efficiency Sessions, Ministry of Industry and New Technologies, 7th Floor meeting room

See agenda for presentations [on file] *Notes: Some issues with the simultaneous translation occurred throughout the day which delayed the sessions somewhat. Attendees were very attentive. The morning exercise was cut to just making elevator speeches about the advantages of the ISO50001 Energy Management System for Kazakhstan. The group divided into 4 sections and interacted well. All the speeches were useful in describing the benefits of the standard. One group even used the Plan-Do-Check-Act model within their speech. **I believe the attendees understood the advantages of adopting the internationally approved ISO50001 system. USDOE/ORNL may have a role in helping Kazakhstan implement ISO5000` in their new energy efficiency law along with GSEP type requirements for energy intensity reduction.** Afternoon sessions became even more delayed due to discussions about the topics, and many needed to leave early for transportation reasons. The exercises were cut short. Certificates of attendance were awarded to all attendees.(photos posted on ORNL Sharepoint)*

1230 Lunch with Alexander Belyi, Energy Efficiency Project Manager, UNDP

Location: 47 Kabanbay Batyr Avenue, canteen

POC: Alexander Belyi, ph. +7 701 772 1552, 7721552@mail.ru

DOE Participants: Jim Quinn, Riyaz Papar, Robert Hitch, Lori Bird, Michael Cohen

Embassy Participants: Kuralay Omarova

Status: Confirmed

Notes: None – see Quinn & Paper notes.

Friday, September 3

0915 Depart the Rixos Presidential Hotel for the Ministry of Environment Protection.

0930

Meet with Toleubay Adilov, Director of Kyoto Protocol Department, Ministry of Environment Protection.

Location: 8 Orynbor Street, House of Ministries, Entrance 14

POC: Aimgul Ismagulova, ismagulova@eco.gov.kz, ph. +7 (7172) 740 870, +7 (7172) 740 258, Tolebay Akzhigitovich Adilov, ph. +7 (7172) 740 807, +7 701 526 0284

DOE Participants: Lori Bird, Donna Heimiller, Michael Cohen, James Quinn, Riyaz Papar, Robert Hitch

Embassy Participants: Kevin Covert, Laura Smiley, Kuralay Omarova, Bruce Hudspeth

Status: Confirmed

*Notes: Minister's comments: conventional energy costs are very low in Kazakhstan; however renewable sources are needed for environmental concerns. A plan is in place through 2024. Interest in assistance from the US DOE is for best practices- they have a strategy and law for renewables. The Ministry of Energy and Mineral Resources administers the law, but did not adopt the strategy proposed by the Ministry [MEP] of Environmental Protection. MEP does have grants and loans available for renewable technology. Several demonstration projects are underway including wind and solar with battery backup [near a university]. A future project will be a 50MW wind powered generator near Astana. The energy efficiency law was returned by Parliament to MINT for corrections & additions. It must be agreed to by all Ministers before return [est. Dec2010] to Parliament. Concerning Kyoto [ratified last year]: MEP has drafted changes to existing laws as needed to be in compliance. They need to change the format of reports on CO2. They have had a 3rd party review of Kyoto compliance plans and are making a few changes. Their emissions inventory is complete as modeled after the European Union work. **They do wish to contact the Kazakhstan representatives for ISO50001 to see how that can fit the CO2 reduction goals; Committee for Technical Regulation and Metrology, email: dyussikeyeva_1@memst.kz Web: www.memst.kz – we checked through the US Embassy & believe Russian translations of DIS-ISO50001 are not available.***

1030

Depart for Samruk-Kazyna.

1045

Meet with Bakhytzhan Jaksaliyev, Executive Director for Management of Electric Power Assets, Valeri Dmitriyevich Ogai, Electric Power Projects, SamrukKazyna Sovereign Wealth Fund.

Location: 22 Kabanbay Batyr Avenue, Block C, 7th floor, Office 703

POC: Valeriy Ogai, ph. +7 (7172) 790 477, Bakhytzhan Jaksaliyev, ph. +7 (7172) 790 563, +7 (7172) 790 479 (Assistant Gaukhar), g.makhmudullaeva@s-k.kz

DOE Participants: Lori Bird, Donna Heimiller, Michael Cohen, James Quinn, Riyaz Papar, Robert Hitch

Embassy Participants: Kevin Covert, Laura Smiley, Kuralay Omarova, Bruce Hudspeth

Status: Confirmed

Notes: This group manages all power generating assets in country to include distribution & coal mining. New hydro and coal generation projects are in the works as well as commercial marketing efforts to support prices. The Power Development Institute does research in applied energy [renewables & efficiency]. This ministry manages 2 funds to encourage economic development such as a hydro 300MW peak shaving unit with 50Mw offset hydro unit + a few micro hydro units. The new plants will produce electricity at a higher cost than existing coal units. Mr. Ogai believes the seminar was good for his country and wishes to continue the exchange of ideas. The incentive due to

financial savings appears to be non-existent in Kazakhstan due to perceived low energy prices and high construction costs. They do not manufacture much equipment in country. They are mostly agricultural with little need for energy generation. He desires partnering with ORNL, and is interested in the ASME protocols for assessments. The new energy efficiency law has made decisions more complex when adding generating capacity. They do have a program allowing private investment in renewables, and they are moving more toward a free market in this area.

- 1145 Depart for the Nazarbayev University.
- 1200 Meet with Kanat Baigarin, Managing Director, Kenneth Alibek, Senior Counselor to the President of Nazarbayev University, Energy Research Center, Nazarbayev University.
Location: Nazarbayev University, Kabanbay Batyr Avenue
POC: Kanat Abdualiyevich Baigarin, ph. +7 (7172) 689 878, +7 701 511 0253, kbaigarin@nu.edu.kz, Kuat Alkenov, ph. +7 701 798 4428
DOE Participants: Lori Bird, Donna Heimiller, Michael Cohen, James Quinn, Riyaz Papar, Robert Hitch
Embassy Participants: Kevin Covert, Laura Smiley, Kuralay Omarova, Bruce Hudspeth
Status: Confirmed
Notes: The new university will open for classes in September 2010. They are partnering with several US Universities [see flyers] and are open to additional connections in the energy efficiency and renewables areas.
- 1315 Depart for the Embassy (NOTE: Lori and Michael depart for the airport).
- 1330 Lunch
Location: Embassy
- 1430 Meet with Serikbol Azhikenov, Deputy Director of New Technologies Department (covers energy efficiency), Ministry of Industry and New Technologies.
Location: 47 Kabanbay Batyr Avenue
POC: Chinara Bopiyeva, Energy Efficiency Specialist, ph. +7 701 383 5716
DOE Participants: Jim Quinn, Riyaz Papar, Robert Hitch
Embassy Participants: Kevin Covert, Kuralay Omarova
Status: Confirmed
Notes: They expect ISO5001 to be written into the new energy efficiency draft law – 1500 companies would be subject to implementation. They are also interested in the Global Superior Energy Performance program. It will probably be a requirement rather than a voluntary recognition program. They are interested in obtaining the software tools from SEP and ITP including Quick PEP. Training on ISO50001 is of interest when it is finalized. Potentials for further interaction from USDOE and ORNL are indicated. GaTech would be capable of providing training and/or materials for implementation assistance based on US Demonstration projects. The efficiency law is not specific on government support, but it is declarative because financial incentives will be few [due to low energy costs]. Innovation is in fashion now. They are looking at technologies to reduce ash content of coal – cleaning coal at the mine would reduce transportation costs & may compete cost-wise with gasification.
- 1600 Depart for the Rixos Presidential Hotel.

Travel 4 & 5 September 2010

Kazakhstan EE Workshop Summary Points

Debriefing notes of entire US team (by Riyaz Papar)

presented to Ministers by James Quinn

Two full day workshops were held on September 1st and 2nd in Astana. These were facilitated by the MINT, US DOE, ORNL, NREL and the US Embassy in Kazakhstan. After the initial plenary session, the workshops had a EE track and a RE track.

US participants included Jim Quinn, Riyaz Papar, Robert Hitch for EE and Lori Bird and Donna Heimiller for RE.

I will talk about the summary and highlights for the EE workshop and Lori will then continue with the RE workshop summary.

There were 25-30 participants on the 1st day in the EE workshop and 20-25 participants on the 2nd day. The participants were mainly from government and ministerial offices, consulting and design engineering companies, utility companies, research associations, UNDP and some industry groups.

The 1st day was more of an overview and results of the US DOE industrial EE program. The 2nd day was in-depth presentations on the energy management standards, case studies, energy saving assessments, BestPractices software tools, training, etc. The overall feedback was very good and we ran out of time during the question and answers.

Some of the main observations and items for further discussion were:

- How can we get an EE program started here in Kazakhstan that has similar facets to the US DOE program?
- Who would pay for the assessments and resources and tools?
- How do we follow up for project implementation after the assessments – energy is very cheap – project cost is high....
- Would the **SEN Leader [and SEP] model work** – voluntary pledges versus mandatory
- Can the US DOE BestPractices Tools be accessed in Kazakhstan and would they be available in Russian with the local (regional) defaults and settings?
- Capacity building is a big concern – need to start at the awareness level and then have detailed expert level training.....similar to the US possibly

- One program – IACs – maybe a good fit for Kazakhstan because the Nazarbayev University is already starting on some collaboration activities with the US (Jim – to give more details on the China program, if needed)
- The Buildings area needs more focus....especially new technologies and being heat dominated, advanced heat pumps, etc. partnerships with the US labs should be evaluated
- Combined heat and power (district heating) is another strong area for cooperation between the US and Kazakhstan
- The Energy law has a lot of room for not meeting specific energy standards that maybe existing internationally...
- Can more enforcement be possible in the energy law.....**one idea is to see if the ISO50001 can be incorporated in some way shape or form in the law...**
- How can the ESCO model be promoted here in Kazakhstan....government policy?

**Respectfully,
Robert Hitch
Georgia Institute of Technology
Enterprise Innovation Institute
Energy and Sustainability Services**