

Yukon Energy Charrette – March 7 – 9, 2011

The following notes do not represent a comprehensive “capture” of all that was discussed at the charrette, but are merely a compilation of the raw notes gathered during the event. A more complete and formal report will be available by late April.

Day 1 – Day Session

Identifying the Problem (issues, assumptions, restraints):

- We are running out of clean, affordable energy and we don't have a lot of time. Whole issue of energy security. This is a significant problem that is relevant to all of us.
- Status quo is not sustainable in meeting Yukon's energy needs.
- Growing population. Consumption is increasing.
- Isolated grid
- Economic growth: people, consumption, industry, transfers
- Environmental consequences
- Infrastructure is aging.
- Utilities need to be more efficient – load management and peak management
- There are some critical decisions to make in terms of energy future. Facing tough choices.
- We need/want more electricity without using diesel, without paying/risking a lot of money on renewables, and we should all use less/not be wasteful.
- meeting economic development goals
- uncertainties about how much generation is needed (unpredictable demand). We cannot predict the future. Highly variable.
- What are we willing to pay? We are not paying the true cost of power right now. We need a clear price signal. Low energy costs result in waste.
- Regulatory structure doesn't reward Demand Side Management (energy conservation)
- Need mechanism for Independent Power Producers.
- lack of winter energy. Power most needed in winter, when we have least amount of hydro.
- issue of rightsizing capacity/scalable

- boom and bust versus consistent growth.
- How do we mitigate risk of boom and bust economy?
- isolated grid, 2 utilities (small jurisdiction), small ratebase
- greenhouse gas emissions, climate change, peak oil
- can't always wait for business case
- peak demand; variability of demand
- expensive diesel generation – have to generate more power using diesel
- non-sustainable generation (diesel)
- meeting peak demand in winter
- limited short-term solutions to meet growing demand
- lack of certainty regarding long-term economic/load growth (lack of long term vision/planning) and uncertainty regarding climate change and hydrology
- The era of surplus is ending and a mining boom is underway.
- Is the issue an energy one or a social one (perhaps solution is behavioural and we can learn from the past)?
- Yukon Energy feels some obligation to supply new mines. Issue of Orders-in-Council and the Obligation to Serve. Issue of government policy.
- Question about mines: who bears the risk? Rates to mines should reflect the risk to Yukoners (price shock when mines shut down). Mines should be treated differently in terms of rates. To serve or not to serve mines is an issue that needs to be addressed. Many, many questions about who's responsibility it should be to provide power to mines. Clarify mandate of Yukon Energy.
- need to replace the attributes of diesel. However green doesn't seem feasible when we have diesel that works.
- need a mix that is flexible
- consider transition technology
- need about 100 gigawatt hours per year of clean power
- Electrical energy is becoming more popular.
- Consider ramping up biodiesel from trees.

- Will need to replace aging generators
- Expensive energy lowers our standard of living; social justice implications of expensive energy. Support people who are vulnerable.
- Affluent people don't mind if rates go up, but it's a problem for the less affluent.
- Rate inequality.
- There's a lack of transparency about costs and who pays.
- Seasonal challenges.
- There is a lack of consumer input because of a complicated regulatory language and process.
- Confusing regulatory structure; problem with accessibility of issues and process. Rate issue is complete and there is no consensus on this issue.
- Very complex and intertwined issues
- We don't clearly understand the non-mine load growth.
- Even without mines we soon will reach our limit of being able to supply Yukoners with electricity using existing renewable sources.
- Public education gap/need for broad public education and engagement
- Lack of common language based on facts – hard to have positive, informed dialogue with the public to build consensus
- People want to be part of the solutions but they don't know what to do.
- Lifestyle choices (energy hogs). Consumption is moving in the wrong direction (up). There is a culture of energy entitlement. Explosion of electronic devices, ghost loads, etc. Need to encourage energy efficiency (energy efficient appliances, etc.)
- Smart Meters are a must.
- Whitehorse is not a well planned community in terms of being able to use the least amount of energy possible.
- Different opinions on right/wrong decisions
- Need to focus on energy and not just electricity.
- Are we technologically ready for some choices (ex. electric cars)?
- IPP can be in competition with utilities; length of contract an issue

- use hydro as peak power and use solar with baseload
- new hydro issues: flooding First Nations land used for hunting and gathering
- must develop partnerships with First Nations and mines

What do we want Yukon's energy future to look like (what is the vision)? What are the opportunities and solutions?

Attributes of any energy choice should be:

1) Affordability:

- equity
- fairness/socially responsible
- good for Yukon
- Not necessarily the cheapest
- Can't have rate shock (anything above 15 percent per year).
- economically responsible
- per capita; family fair consumption
- use energy to build community prosperity
- true cost of power vs. affordability. Linked to government policy.
- small business – affordability and reliability are the main issues
- challenge of shared responsibility
- Need block rate structures to send energy conservation signal
- Must balance being equitable among customer classes with conservation.
- Rate design: need trade-offs.
- Obligation to serve at what price? Should the mines pay the full cost for their electricity?
- Real cost of energy opens door to discussion about fairness of rates

2) Reliability:

- Boom and bust economic...need to plan for that.
- Security of supply of fossil fuels unknown.
- Competing interests: how to balance/choose/find win-wins. Must balance interests.
- need predictable cost
- need capital/operating cost ratio that makes sense
- further investigate trans-border energy links with B.C. and/or Alaska.
- reliable in both winter and summer
- use renewable to provide baseload energy
- Mines should continue to be asked to subsidize infrastructure.
- speed to market

3) Flexibility:

- limit/show growth of change: is this under our control?
- Any short term goals must lead to long term solutions.
- any solution needs to be accepted by the Yukon public.
- assets should be built with future needs in mind (ex: Carmacks-Stewart transmission line should have been built bigger)
- There needs to be a greater generation mix. Must diversify.
- Yukon Energy needs to go beyond electricity and be more about energy; should get into district heating.
- Need to be open and flexible for emerging technologies.
- Coordinate with other initiatives.
- Power sources must be incremental.
- diverse suppliers model

4) Locally maintainable

- vertical integration using local resources

- need to consider limits to growth
- Does it improve economics in Yukon? Needs to support economic development.
- technical limits/skills
- technology available on a suitable scale?
- leadership in technology, Demand Side Management (energy conservation), innovation, policy, etc.
- Provide access for small energy producers to contribute to the system.

5) Environmentally responsible (clean?)

- Why diesel is not a good choice: greenhouse gas emissions, security of supply, cost (price fluctuates)
- meet needs sustainably, but people have to recognize and explicitly acknowledge that there will be tradeoffs against competing interests (i.e., new generation facilities will have to be built because Demand Side Management - conservation and efficiency - won't meet all the demand)
- need to look at life time costs of projects when determining if they are clean or green (cradle to grave)
- opportunity to look at green building codes for Whistle Bend, spruce bark beetle district heat, carbon neutral
- look at total Yukon greenhouse gas reductions.
- don't just look at greenhouse gas emissions. There are other costs that you can't put a dollar value on.
- We need to move away from fossil fuels and we need to reduce our carbon footprint. Need to consider footprint size in whatever Yukon Energy does
- All Yukoners need to take personal responsibility for their energy usage. Small changes embraced by many can make a big difference. We should all be less wasteful.
- I want to feel I am doing something to help the environment.
- More 'stick' and less 'carrot'. Emphasize individual responsibility.
- We need to send price signals that will lead to energy conservation.
- We need to be super green.

- Demand Side Management ideas such as hot water heaters in homes controlled by Yukon Energy; interruptible electric heat
- Yukon Energy needs to develop more renewable energy.
- Smart Metering
- Offer programs for heat pumps.
- Award people for efficient use of energy.

Day 1 – Evening Session

Comments from the public on the work done by charrette participants on Day 1:

- Whatever choices are made need to be flexible and scalable.
- There needs to be a consistent strategy
- There is an opportunity to replace diesel with renewable
- Must figure out the solutions
- We need to know the true cost of electricity. (We don't pay true cost but we also don't pay the true cost of oil).
- What is the breakdown in electricity supply?
- Opportunity to meet greenhouse gas emissions targets
- Good process. Glad Yukon Energy is doing this.
- Make money off distributed generation (i.e. solar panels on people's roofs)
- Individual systems (net metering)
- Challenge people: the solution is low hanging fruit (energy conservation)
- Look at the big picture
- People are too concerned about the past decisions and not the future ones.
- Twenty to thirty year solution: Atlin, Gladstone, Marsh.
- Who profits from rate increases?
- How long does it take to build new generation of various sizes?

-Let Western Copper build/provide their own power (liquefied natural gas) and then Yukon Energy could buy some of it for other Yukoners

-Should public be aware of rate plan changes when fossil fuel heat is more expensive than electricity?

-Information to the public needs to be clear

-In terms of decision making criteria, consider the following additional things: 1) innovation; 2) politically independent; 3) local; 4) scientifically objective; 5) incent economic and resource development; 6) local economy benefit/create community revenue stream and jobs; 7) research new technologies/innovation for cold climates and include research and development centre; 8) synergies with other systems i.e. southeast Alaska/BC Hydro

Day 2 – Day Session

Playing the Energy Game (alternatives and consequences of choices):

Scenario: the existing energy generation with hydro is 400 GWh/yr. Groups were asked to find new energy for 2015 (additional 144 GWh/yr), 2025 (additional 273 GWh/yr), and 2050 (additional 650 GWh/yr). Participants were to base their choices on the general criteria of affordability, reliability, flexibility, and environmentally responsible. A possible 5th consideration would be “Is it local?”

Choices, in order of preference:

2015:

-Hydro Enhancement (Marsh Lake)

-Demand Side Management

-Wind

-Biomass

-Hydro Enhancement (Atlin Lake)

-Hydro Enhancement (Gladstone)

-Liquefied Natural Gas

-Solar

-Waste to energy

-Diesel enhancement

- Individual district generation
- On site generation at large mines from pipeline

2025:

- Solar and wind (tied for first place)
- Liquefied Natural Gas
- biomass, medium sized hydro and Demand Side Management (tied)
- geothermal
- small hydro/hydro enhancements and micro-nuclear (tied)
- vehicle battery and waste to energy (tied)
- Connection to BC grid
- spinning reserve, Independent Power Producers, and large hydro (tied)

2050:

- solar and new hydro (tied)
- Demand Side Management, connected to grid, liquefied natural gas (pipeline), biomass (tied)
- nuclear, new technologies, geothermal and electric transportation (tied)

Day 2 – Evening Session

Dot-mocracy Game: members of the public were invited to make their choices as to energy options for 2025 and to vote for their choices using “dots” with 1 dot = 1 vote.

Results of game, in order of preference:

- Demand Side Management/energy conservation (43 votes)
- biomass (40 votes)
- wind (35 votes) <21 votes for Ferry Hill and 14 votes for Mount Sumanik>
- new hydro medium-scale (31 votes)
- nuclear (24 votes)

- solar (23 votes)
- geothermal (15 votes)
- transmission: B.C. or Alaska (15 votes)
- Marsh Lake storage (13 votes)
- New Hydro – small scale (13 votes)
- Atlin storage (12 votes)
- waste to energy (7 votes)
- Gladstone diversion (5 votes)
- natural gas (5 votes) <on site generation 3 votes and conversion 2 votes>

After using dot stickers to choose favoured options, here are some general observations from members of the public who participated in the game:

- There were no real micro options (options for individual homes).
- Nuclear didn't make the list, but it really should have. It is practical. It works.
- We needed to know the cost per kilowatt hour (dollar signs tried to show that but they weren't all that helpful).
- Demand Side Management (energy conservation) is a no-brainer because it's part of the immediate solution.
- A number of people were looking for synergy between systems when they were making their choices.
- A number of people voted with two to four stickers on each of several options. Only a few put five or more stickers on any one option. Only a few put just one sticker on any one option.
- Would like to see Yukon Energy using Smart Meters
- Yukon Energy should look at time of day and time of year when considering Demand Management (ex: mines should be cut off from the grid in the winter)
- Biomass provides ready employment and is carbon neutral, clean and sustainable (long term).
- There should have been an option for small micro-generation (customer owned) or co-generation for residential, business and institutions.

Day 3 – Day Session

Principles of decision-making:

- All options less per kilowatt hour than diesel
- All options must ensure reliability, flexibility, environmental responsibility, affordable
- Independent Power Producer options should be considered
- Alternative/local generation should be considered

Risks of Decisions

- Planning dollars
- Yukon Utilities Board
- Government legislation (Orders in Council)
- Energy security

How should Yukon Energy engage with the public from this point forward?

- Make public the specific principles of decision making and promote the four objectives (reliable, affordable, environmentally responsible, and flexible)
- Consolidate charrette outcomes into a summary report that is shared with the public.
- Propose your suggested energy portfolios within six months or less.
- Help people understand how the on-going engagement process will direct Yukon Energy's decision making. Report back one month out, two months out, six months out, etc.
- Show that the charrette has teeth.
- Promote public ownership. Show what mileposts were established at the charrette and providing periodic reporting and progress reports to show results. Accountability.
- Repeat charrettes with more emphasis on getting public out and help people feel they can make a difference.
- Provide detailed economic analysis about suggested options: help us understand how you come to the conclusions you will read in the 20-year resource plan
- Bring draft resource plan to a public meeting

- Provide Yukoners with regular updates on the process
- One day a year information sessions
- Major outreach every second year (on a week-end when it is convenient for more people)
- There needs to be broad engagement: youth, industry, First Nations, public, stakeholders, etc. Partners could include Energy Solution Centre, Yukon College, Yukon Conservation Society, municipalities, schools, retailers, non-government organizations, Yukon Housing (building standards), etc.
- Create a working group to hash out changes; create an energy working group of local people including various stakeholders and members of the general public to continue working on these issues with Yukon Energy. This group would be led by Yukon Energy.
- Yukon Energy involvement with schools, but also get the students involved in the planning.
- Presentations in every school
- Energy parade
- Maybe the MAD (Music, Art and Drama) students at Wood Street school could create an art piece that promotes energy conservation (work with the Experiential Science class) on this.
- School credits for doing energy related assignment
- paid ambassadors
- scholarships
- fix up schools
- Hold competitions among the general public re: energy use and energy conservation.
- Turn every consumer into a producer of energy
- mail out dot-mocracy so others can vote
- mail out a false high bill to shock people and get them talking
- tours of dams
- brief email updates
- need to help people overcome apathy; turn off the power should be their first choice
- Build trust, continued dialogue.
- People need to see action now, based on what Yukon Energy heard at this charrette.

- Make an energy video game like SIM City.
- Smart phone app to provide information about energy consumption. Could show what sources we are using at any given time (hydro, diesel, etc.)
- Develop visual representations of energy information.
- hold 'brown bag lunch' sessions.
- Public needs to be engaged and better educated about energy issues. In particular, there needs to be better communication from Yukon Energy and Yukon Electrical Company Limited with regards to energy conservation.
- People need to understand that energy issues are important to everyone and affect everyone.
- Public meetings in more communities
- Immediate action on Demand Side Management
- Yukon Energy could empower people to take charge/control of their energy consumption (be the change).
- Work with landlords and tenants to look at creative financing in order to implement Demand Side Management (energy efficient appliances, building attributes and designs like windows, doors and retrofits)
- More school and office Demand Side Management programs
- Communicate directly with individual companies and employees about energy conservation.
- Use the charrette participants to communicate what was learned here...everyone should tell two or more people so that the message can spread.
- Bring the Yukon government to the table as leader of the multi-stakeholder group. Also bring large clients/mines into the conversation.
- Get ideas from other jurisdictions
- Make the information relevant and real for youth
- Train students who can then present information to other students (skill development). Provide cash incentives to schools based on student work. Ambassadors – informed 'audits' with student swat teams.
- In school energy fair
- Put information on bills telling people what they would be paying if they were charged the true cost of providing them with power

- “Power Nut” super hero
- Need fun projects to educate the public
- Get parents talking to kids and kids talking to parents about energy issues
- Public meetings: tap into existing meetings (partnerships)
- Pick visible, relevant wedge (ex: ‘schools are energy hogs’) to focus public engagement, training, public relations. This also have the effect of getting youth involved.
- Select action –oriented project to increase the public’s knowledge about energy and energy conservation (ex. school audits, door to door campaigns, etc.)
- People need to have more of a basic understanding about the Yukon energy situation. They need to understand tradeoffs/rationale for decisions, and that tradeoffs are unavoidable.
- connect Yukon Energy decisions to feedback from the public (explain rationale for Corporation’s choices).
- Regular section in the Yukon newspapers.
- There needs to be more advertising/public information regarding Demand Side Management.
- Solar powered bill boards telling people their energy consumption and that Yukon Energy is having to run diesel.
- Encourage change in policy and in Public Utilities Act
- Politicians need to be engaged
- website/blog, but not just social media. There is a place too for flyers, ads, etc.
- trade show

Day 3 – Evening Session

Dot-mocracy Game: members of the public were given 16 dots and asked to place them on their favourite suggestions that came from the Day 3 day session regarding how Yukon Energy should engage the public from this point forward.

Most popular suggestions:

- Partnerships: involve Yukon Housing Corporation, Energy Solutions Centre, businesses, First Nations, etc. In energy conservation programs – 19 votes
- summarize resource plan and make it readily available – 15 votes

- Produce energy-related video game like Civic Mirror or Sim City (but check first to see what already exists before developing new material) – 13 votes
 - Form an energy working group made up of stakeholders and ordinary Yukoners – 12 votes
 - Small but consistent communications is key – 8 votes
 - provide regular and ongoing updates and opportunities for further public input – 8 votes
 - Develop energy course for schools – 8 votes
 - Charrette every two years – 6 votes
 - let's keep talking – 5 votes
 - Information needs to be visual, easy to understand, and needs to 'hit home' with people – 5 votes
 - Blog/Facebook/web – 5 votes
 - Solar powered sign that shows how much energy is being consumed in real time (and when we're into diesel) – 5 votes
 - Fun competitions between families or between communities – 5 votes
 - Convene in six months to update participants on progress – 4 votes
 - Take message to other Yukon communities – 3 votes
 - Electricity Day or Energy Fair – 3 votes
 - Door to door DSM campaign – involve youth – 2 votes
- Other suggestions that were different from what was proposed during the day session:**
- Produce an annual information sheet for the fridge or cupboard that shows the cost per kilowatt hour of dryer, fridge, TVs, etc. So consumers can easily see the impact and cost of use – 2 votes
 - Estimate costs and timeline for options discussed at charrette – 3 votes
 - Ask consumers if electric heat is OK or decide that the seasonal load can work – 5 votes
 - Consumption chart on web needs to be easy to find and read – 2 votes
 - Notice to radio stations when we're burning diesel – 2 votes
 - Show us how full our reservoirs are – 3 votes