

# Next Generation Hydro and Transmission Discussion Paper

## Summary of Engagement Feedback Phase 1

January 15, 2016



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# INTRODUCTION

This report summarizes “what was heard” during the engagement activities associated with Phase 1 of Yukon Development Corporation’s (YDC) Next Generation Hydro Project. Phase 1 called Project Identification (Phase 1) includes technical and engagement work carried out between September 2014 and December 2015. The main engagement activities included pre-engagement stakeholder interviews, three technical workshops, 5 public speaking events (video taped), the First Nation Energy Forum, community tour, First Nation government meetings, stakeholder requested meetings, exchange with Grade 11 Experiential Science and community high school students and a public awareness campaign (flyer, ads, newsletter, social media and website). Engagement activities were designed to share Phase 1 technical information with target audiences and to solicit feedback. Comments received have been compiled into this document and organized by themes heard.

YDC hired Tipping Point Strategies to conduct the engagement activities and Midgard Consulting to carry out the technical work.

# BACKGROUND & METHODOLOGY

In 2013, Yukon Government issued the Hydroelectric Power Planning Directive (OIC 2013/201 R-YDC-DIR - HPP) to Yukon Development Corporation who then produced the Next Generation Hydro Project Work Plan. The work plan presented a technical and engagement process for what became known as Next Generation Hydro Phase 1 – Project Identification. The Phase 1 process started in mid 2014 and ends in early 2016. The Phase 1 technical work focused on establishing an estimate of Yukon’s future winter electrical needs 20 to 50 years out (Yukon Electrical Energy and Capacity Need Forecast 2035 to 2065) and then assessed potential hydro sites in the Yukon that could meet this future need (excluding the Yukon River). From a list of 200 sites Midgard Consulting utilized criteria to eliminate all but 6 potential hydro sites (Site Screening Inventory 1 and 2 Reports and Scalability Assessment Report). They then did further analysis to determine the key characteristic of each site (Positive and Negative Environmental and Socio-economic Effects Report). They also did a high-level assessment of the costs associated with building a hydro site of this type (Project Cost Per Hydro Development Phase).

Addressing the work plan requirements, Midgard Consulting also researched the market potential and costs of a transmission connection between Yukon and Fairbanks, Alaska

and Yukon and northern British Columbia (Jurisdictional Transmission Line Technical Logistics Analysis and Transmission Market Benefits Assessment Reports). An additional report was produced to look at the cost of connecting Watson Lake to the Yukon transmission system (Watson Lake to Faro Transmission Study).

Early in the engagement process, YDC heard that many people wanted to know if there were other renewable energy options that could also meet our electricity needs 20 to 50 years in the future. In particular, early engagement interests were focused on run-of-river hydro, small hydro with storage (< 10MW), wind and other renewables. YDC asked Midgard Consulting to produce an additional report called *Putting Next Generation Hydro in Context: Other Solutions to Meet Yukon's Long Term Energy Future*. This report provides information about four scenarios and the benefits and tradeoffs associated with their ability to meet future forecasted need. The scenarios are 1) fossil fuel (natural gas), 2) one Next Generation Hydro sized project (57MW expandable to 90-107MW), 3) renewables portfolio, and 4) renewable portfolio with one pump storage hydro project.

The engagement process was designed to support conversations related to this Phase 1 technical work. As such, the target Phase 1 engagement audiences included First Nations, communities, stakeholder groups, Yukon Government, municipalities, non-profit groups, youth (15 to 30 years) and the broader public.

The goal of the Phase 1 engagement process was to:

1. Proactively lead the Next Generation Hydro conversation.
2. Engage audiences with factual information by a variety of suitable means.
3. Educate a group of technical professionals from First Nations, government and stakeholder groups through a series of technical workshops.
4. Seek to find ways to help interested audiences reason through the information in a way that parallels the process taken by the technical team and the YDC Board.

Feedback from the various engagement activities was recorded and compiled into this document to be presented to the YDC Board in early 2016.

## Engagement Activities

Over a year and half, a variety of Phase 1 engagement activities suited to different target audiences took place. Activities such as speaking events (video taped), technical workshops, energy game for school visits and more as listed in Table 1. All of the

information produced in Phase 1 is available and can be found on the Next Generation Hydro website.

Table 1. Next Generation Hydro Phase 1 target audiences and related engagement activities.

Audience	Tactic
Technicians of First Nation Governments, Yukon Government and Agencies, Municipalities, and related stakeholder groups (Chambers, NGOs, RRC etc.).	<p>Early stage stakeholder interviews (2013/14)</p> <p>3 Technical workshops were held (Nov 2014, Feb. 2015, Nov. 2015)</p> <p>10 Technical documents were produced</p> <p>3 Educational handout booklets</p> <p>As requested presentations to agency and stakeholder boards and committees</p> <p>Information booths at various events</p>
First Nation Governments	<p>First Nation Energy Forum #2</p> <p>First Nation Chief and Council meetings</p> <p>Meetings with Council of Yukon First Nations</p> <p>First Nation Government and or community visits up until December 2015</p>
General Public	<p>Next Generation Hydro video</p> <p>Next Generation Hydro website, Facebook site, and Twitter</p> <p>Introductory household flyer</p> <p>6 Newsletters (March 25, April 28, July 7, Sept. 11, Nov. 3, Dec. 24)</p> <p>Awareness &amp; fact campaign 6 newspaper ads over 12 weeks &amp; related website updates)</p> <p>Technical workshop speaking events &amp; video copies (online)</p> <p>Experiential Science Grade 11 students attending workshops and</p> <p>Engagement team visit schools in Whitehorse (Experiential Science and Grade 9 class) and the communities (various</p>

	<p>grades)</p> <p>Community visits – potentially impacted communities Mayo, Dawson, Carmacks, Teslin, and Watson Lake</p> <p>Energy game and video</p>
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## Key Engagement Tactics

### Technical Workshop Objectives

Three technical workshops were held. The overall purpose of the workshops were to inform audiences of the Directive and the technical work completed to date. The target audience for the workshops was technical representatives from Yukon government and agencies, First Nation governments, Renewable Resource Councils and stakeholder groups.

Additional goals for the workshops included:

- ◆ To provide the audiences with balanced, objective information and to assist them with understanding the problem, alternatives, tradeoffs and opportunities regarding Yukon’s future long-term energy needs.
- ◆ To show how the Next Generation Hydro solution compares with other non-renewable and renewable portfolio options.
- ◆ To introduce and review concepts related to energy literacy.
- ◆ To providing an opportunity for discussion and feedback related to the technical information shared.

The engagement team produced a participant handout for each workshop that included key education concepts and technical summary sheets. An energy game was also designed and used at Workshop #2 and later at various school visits (community schools, Grade 11 Experiential Science and Grade 9 class).

Midgard Consulting presented summaries of their technical papers and the attendees were then able to ask questions and share concerns and perspectives, which were recorded in a workshop report for each event. These reports and a video of the speaker events are available on the Next Generation Hydro website.

Next Generation Hydro and Transmission technical papers produced by Midgard Consulting are:

- ◆ Site Screening Inventory Part 1 and 2
- ◆ Yukon Electrical Energy and Capacity Need Forecast (2035-2065)

- ◆ Jurisdictional Transmission Line Technical Logistics Analysis
- ◆ Transmission Market Benefits Assessment
- ◆ Watson Lake to Faro Transmission Study
- ◆ Scalability Assessment Report
- ◆ Positive and Negative Environmental and Socio-economic Effects
- ◆ Project Cost Per Hydro Development Phase
- ◆ Providing a Context for Next Generation Hydro

### First Nation Energy Forum Objectives

The purpose of the First Nation Energy Forum 2 held in May 2015 was to continue the conversation started at the first Forum held in November 2011. The first Forum was co-hosted by Yukon Energy Corporation and the Council of Yukon First Nations (CYFN). The second forum was cohosted by YDC and CYFN. The following was the purpose of the second Forum:

- ◆ To promote First Nation to First Nation discussion of the attributes related to energy planning and hydro development projects. This included all Yukon First Nations with or without a potential project in their traditional territory.
- ◆ To learn from First Nations from other jurisdictions with operating hydro projects and review their experience, best practices and recommendations.
- ◆ To learn about the variety of financial arrangements that can be made for large infrastructure projects.

The following speakers were brought to the Forum to share their experience with hydro projects. They also presented at a related public evening speaking event in Whitehorse that was video taped. The speakers included:

- ◆ Byron LeClair, Director of Energy Projects from Pic River First Nation, Heron Bay, Ontario
- ◆ Tracey Pascal, Communications Manager from First Nation Power Authority, Regina, SK
- ◆ Marc Morin, Chair of Board, Groupe PEK from Pekuakamiulnuatsh Takuhikan, Mashteuiatsh, QC

- ◆ Jason Calla, First Nations Financial Management Board and Temixw Planning, West Vancouver

### Community Tour Objectives

The purpose of the community tour was to explain the Directive and to share technical information related to the short list sites. Only communities that could potentially be impacted by a short listed Next Generation Hydro site were visited. In each community, the First Nation and municipality were also approached for meetings. Schools were approached for in class visits, where the students were introduced to Next Generation Hydro and played the energy game.

## RESULTS

The following summarizes the level of engagement and input received during Phase 1 for the following: workshops, public speaking events, community tour, First Nation Energy Forum, meetings and interviews and direct correspondence.

### Workshop and Public Speaking Events

Three technical workshops and five speaking events were held between November 2014 and November 2015. Workshop attendance was highest at the first workshop (83) and remained constant for the last two (Table 2). The speaking events had fairly constant attendance except for the last event held in November 2015. There was good representation from the target technical audience at each of the workshop and almost half of those agencies attended went to all three workshops (Table 3). The participants of the workshops and speaker events were very engaged and asked many questions. The input received was recorded and is captured as themes heard.

Table 2. The attendance and representation at Phase 1 workshop and speaker events.

Event	Approx.
Workshop 1 November 2014	83
Speaker Event 1 November 2014	20
Workshop 2 February 2015	55 - 64
Public Open House and Speaker Event 2 February 2015	20



Speaker Event 3 First Nation Energy Forum Speakers May 2015	25
Workshop 3 November 2015	53 - 60
Speaker Event 4 Putting Next Generation Hydro in Context	25
Speaker Event 5 Remaining NGH Phase 1 Technical Papers	8

Representation at the workshops:

Technician attending from:	Workshop		
	1	2	3
ATCO	x	x	x
Canadian Parks and Wilderness Society	x	x	x
Canadian Wildlife Service		x	x
Carcross Tagish First Nation and or Corporation	x		x
Champagne and Aishihik First Nations	x	x	
City of Whitehorse	x	x	x
Council of Yukon First Nations	x		
Dakwakada Development Corporation	x		
Dan Keyi Renewable Resource Council	x	x	
Dawson District Renewable Resource Council	x		x
Dena Nezziddii Development Corporation	x	x	
Ducks Unlimited			x
Department of Fisheries and Ocean			x
Environment Canada	x	x	x
Experiential Science Grade 11 students	x	x	x
Kwanlin Dun First Nation	x	x	
Laberge Renewable Resource Council	x	x	x
Little Salmon Carmacks First Nation	x	x	

Mayo District Renewable Resource Council		X	X
Northern Climate Exchange			X
Selkirk First Nation			X
Selkirk Renewable Resource Council		X	X
Ta'an Kwäch'än Council	X	X	X
Teslin Tlingit Council	X	X	X
Trondek Hwech'in		X	
Whitehorse Chamber of Commerce	X	X	
YG Climate Change Secretariat	X		X
YG Economic Development	X	X	X
YG Energy Mines and Resources	X	X	X
YG Energy Solution Centre	X	X	X
YG Water Resources Branch	X	X	X
Yukon Environmental and Socioeconomic Assessment Board	X	X	
Yukon Chamber of Mines	X		X
Yukon Conservation Society	X	X	X
Yukoners' Concerned with Oil and Gas Development			X
Yukon Chamber of Commerce	X	X	
Yukon Fish and Wildlife Management Board	X	X	
Yukon First Nation Chamber of Commerce	X		
Yukon Energy Corporation	X	X	X
Yukon Development Corporation	X	X	X
Yukon Heritage Resources Board	X	X	X
Yukon NDP			X
Yukon Research Centre	X	X	X
Yukon River Inter-Tribal Watershed Council	X	X	

Other	x	x	x
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## First Nation Energy Forum 2

The First Nation Energy Forum 2 was held in May 2015. Western Arctic, Northern BC and Yukon First Nation leaders and their representatives attended this two-day event along with affiliated First Nation business entities. In total, there were attendees from 12 First Nations, the Assembly of First Nations and CYFN. Also attending were representatives from Yukon Energy Corporation, Yukon Government Energy Branch, ATCO Electric Yukon and Yukon Development Corporation Board, staff and consultants. The following are the First Nation participants in the Forum:

- ◆ Assembly of First Nations
- ◆ Carcross/Tagish First Nation
- ◆ Council of Yukon First Nation
- ◆ Dakwakada Development Corporation
- ◆ Na-cho Nyak Dun First Nation
- ◆ Na-cho Nyak Dun Development Corporation
- ◆ Gwich'in Tribal Council
- ◆ Kaska Dena Council
- ◆ Kluane First Nation
- ◆ Kwanlin Dun First Nation
- ◆ Little Salmon Carmacks First Nation
- ◆ Selkirk First Nation
- ◆ Selkrik Development Corporation
- ◆ Ta'an Kwach'an Council
- ◆ Tle' Nax T'awei Limited Partnership
- ◆ Trondek Hwech'in First Nation
- ◆ White River First Nation
- ◆ Yukon First Nations Chamber of Commerce

The first day of the Forum focused on lessons learned by other First Nations who have been or are involved in hydro development. The second day of the Forum, leadership discussed key issues and next steps. A report was written that summarizes the Forum

report but it is not a public document. YDC is following up with Council of Yukon First Nations and the attending First Nations on workshop outcomes.

## Meetings and Interviews

To get a sense of the issues and interests of the stakeholder groups, pre-engagement interviews were held with a sample of representative organizations. During the Phase 1 process, YDC also offered to make introductory presentations to any interested organization and several acted on this invitation. The following summarizes the main meetings and interviews held during Phase 1. The input received was recorded and is captured as themes heard.

Table 4 List of Phase 1 key meetings and interviews with stakeholder groups.

Organization or Government Agency	Call or Meeting with rep	Pre-engagement stakeholder Interview	Meeting with Board or Board Member
Association of Yukon Communities	x	x	x
ATCO Electric Yukon	x		
Canadian Chamber of Commerce – Yukon Rep	x		
Canadian Parks and Wilderness Society	x	x	
Ducks Unlimited	x		
Mineral Advisory Board	x	x	
Tourism Association of Yukon	x	declined	
Watson Lake Chamber of Commerce	x		x
Wilderness Tourism Association	x		x
Yukon Chamber of Commerce	x	x	x
Yukon Chamber of Mines	x	x	x
Yukon Conservation Society	x	x	
Yukon First Nation Chamber of Commerce	x	x	
Yukon Fish and Game Association	x	x	

Yukon Fish and Wildlife Management Board	x		x
Yukon Heritage Resource Board	x	x	x
Yukon Indian Development Corporation	x	declined	
Yukon Outfitters Association	x	declined	
Yukon River Salmon Sub-Committee	x		x
Yukon Socio-economic Environmental Assessment Board	x	x	
Yukon Research Centre	x	x	
Yukon River Intertribal Watershed Council	x		x
Yukon River Panel	x		x
Yukon Water Board	x	x	

## Community Tour

The following two tables summarize the community tour schedule and attendance. Table 5 shows the communities visited and the meetings held. The input received was recorded and is captured as themes heard.

Table 5 Community tour schedule.

<b>Wednesday April 1, 2015 – Teslin</b> Shortlisted sites: NWPI	<b>Attendance not including YDC</b>
• Teslin Tlingit Resource Council	7
• Village of Teslin Mayor and Council	5
• Teslin Community dinner	38-45
<b>Tuesday April 14, 2015 – Carmacks</b> Shortlisted sites: none	
• Little Salmon Carmacks First Nation Chief and Council	5
• Village of Carmacks Mayor and Council	4
• Tantalus School Grade 8-12 science students	15

• Carmacks Open House	0
<b>Friday April 17, 2015 – Pelly Crossing</b>	
Shortlisted sites: Detour Canyon and Granite Canyon	
• Selkirk First Nation – Chief and Council*	7 + staff
<b>Monday April 27, 2015 – Mayo</b>	
Shortlisted sites: Fraser Falls and Two-Mile Canyon	
• First Nation of Nacho Nyak Dun Chief and Council	8
• Village of Mayo Mayor and Council	4
• Mayo Community dinner	50-60
<b>Wednesday April 29, 2015 – Dawson</b>	
Shortlisted sites: none	
• Tr'ondëk Hwëch'in First Nation Chief and Council	4
• City of Dawson Mayor and Council	3
• Tr'ondëk Hwëch'in Open House	9
• Dawson Public Open House	0
<b>Wednesday June 10, 2015 – Watson Lake</b>	
Shortlisted sites: False Canyon, Upper Canyon and Middle (or Lower) Canyon	
• Town of Watson Lake Councilor	1
• Watson Lake Chamber of Commerce	14
• Watson Lake Open House	2

\* Minister Cathers, Minister responsible for Yukon Development Corporation, met with Selkirk First Nation – Chief and Council.

## Official Responses Received

During the Phase 1 YDC received feedback in the form of written submissions from Yukon Conservation Society (Stakeholder Interview, Workshop 2 correction and Workshop 3), WCS Canada (report Potential Impacts and Risks of Proposed Next Generation Hydroelectric Dams on Fish and Fish Habitat in Yukon Waters), Canadian Parks and

Wilderness Society (Workshop 3), Yukon Chamber of Commerce (1) and several letters. These responses have been presented directly to the YDC Board. The majority of the input received is captured in the themes heard section of this report.

## FEEDBACK

During Phase 1 engagement process all events were fairly well attended, workshop attendee representation was fairly consistent and there were many opportunities for the public to become aware of the project (advertising, newsletter, flyer and media coverage). The majority of feedback received came from the community tour, the three technical workshops, and the 5 speaking events<sup>1</sup>. This input is summarized as themes heard in the following section (in no particular order). This does not capture everything heard but it does capture the essence of what was shared. More specific details can be found in the workshop reports, which can be found on the Next Generation Hydro website.

### Most Often Heard Feedback Themes

The following are high-level themes based on a combination of all the input received during the Phase 1 engagement process:

- ◆ Some concerns that the Directive may be too narrow; there is a broader planning interest and concern around YDC and YEC's roles.
- ◆ Some appreciation expressed for being involved early in the Next Generation Hydro process.
- ◆ General agreement that it is important to avoid the use of fossil fuels to generate electricity.
- ◆ Some apprehension about the scale of environmental impacts associated with the size of the potential Next Generation Hydro reservoirs.
- ◆ Some apprehension that hydro projects will create barriers to salmon migration and could impact spawning channels even if there is mitigation. Concerns also for impacts to other fish species and other wildlife.

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<sup>1</sup> First Nation Energy Forum discussions were captured in a CYFN and YDC report that is not public at this time.

- ◆ Most northern Tutchone First Nation people and the Mayo Renewable Resource Council are against a Fraser Falls hydro project.
- ◆ Elders shared that it is their cultural duty to respect and be the caretakers of water and to keep in mind the needs of future generations.
- ◆ Selkirk First Nation passed a resolution against any hydro dam in their traditional territory.
- ◆ Teslin Tlingt Council is opposed to a hydro project on the Teslin River.
- ◆ Few concerns were expressed about the Two Mile Canyon and Detour Canyon projects.
- ◆ A lot of interest in exploring the possibility of a portfolio of renewable energy solutions that is small scale and distributed to different parts of the Yukon. In particular, the use of pump storage with small hydro, wind, solar and other renewables. Avoiding the use of fossil fuels for peaking if possible.
- ◆ Some interest in avoiding hydro development by importing electricity via transmission line from some other market.
- ◆ Some opposition to interconnecting transmission lines between jurisdictions for reasons of cost, system independence and exporting power (although there was also some interest in exporting power).
- ◆ Some concerns about how a future project(s) will be financed and how this will impacts electrical rates.
- ◆ Some younger people are keen to see a solution that will meet their future needs and saw hydro along with other renewables as a logical choice.



## Themes

### Economic

1. Some concerns around the energy-forecasting model. In particular, whether the Yukon population will grow as predicted, whether mines connected to the grid would be as predicted and whether the forecast energy need 20 to 50 years out should be smaller (less growth) or larger (to accommodate growth or for fuel switching i.e. heating fuel and transportation).
2. Some interest in discussing different ways of calculating GDP, LCOE and the desire to see full lifecycle cost accounting.
3. Some concern for how financing can be found for a future energy solution whether it be Next Generation Hydro or one of the renewable portfolio scenarios. Concern about how a future solution might impact electrical rates and how these costs would be shared amongst the different types of ratepayers.
4. Some concern that the Next Generation Hydro project solution could impact the ability to do smaller IPP projects especially those of interest by First Nations.
5. Some concern about how compensation will be negotiated for Next Generation Hydro project impacts with regards to conflicting land uses (First Nations traditional territory, personal property, trap lines, mining claims etc.) and how there could be compensation for potential loss of ecosystem services.
6. Some interest and concern that a potential Next Generation Hydro project will enable industrial activity and growth and some hope and interest that Next Generation Hydro could help economic growth.
7. Some interest to see more renewable electrical energy generation in order to decrease the amount of fuel transported on Yukon roads.

### Socio-economic

1. General acknowledgement that there needs to be meaningful First Nation involvement in the process.

2. Some suggestion that the government learn from past projects and make sure there are solid plans for mitigation and to ensure local community, First Nation and Yukoners benefit from the economics of building and then maintaining a new renewable project.
3. Some concern that there was a lack of information on how a Next Generation Hydro project or other solution might impact recreation activities and tourism businesses.
4. Some community members and First Nation members expressed concern about the potential impacts to hunting areas, heritage sites, traditional sites, fish camps, habitat protection areas and trap lines.
5. Some concern in the communities that new hydro projects were important to Whitehorse growth but the project footprint would not impact Whitehorse.
6. Some concern about how personal property could potentially be impacted if one of the Next Generation Hydro sites were built, especially around Francis Lake and Hoole Canyon.
7. Some concern that the potentially impacted First Nations and nearby communities might not be able to fully take advantage of the jobs and businesses opportunities associated with the project (it was assumed a larger firm would get the construction jobs).

## Environment

1. Many concerns regarding the reservoir impacts related to potential Next Generation Hydro sites. Specifically, there are concerns about the draw down requirements and how this will affect water quality and flow, erosion, wildlife habitat and fish spawning habitat. Not much is known about the new habitat that would be created by a reservoir and how that would change ecosystem dynamics.
2. Some concern that a one-project solution would have a significant environmental impact for the one First Nation<sup>2</sup> and the people who live in the nearby area.

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<sup>2</sup> There may be more than one First Nation affected if there are overlap traditional territories.

3. Many concerns that hydro facilities would create a barrier to fish migration and spawning habitat, especially for salmon.
4. Some concern that the work to date has not addressed climate change modeling and any future energy solution's ability to adapt to a change in climate (i.e. changes in water flows).

## Technical

1. Many acknowledged the benefits of hydro generated electric energy, as it is renewable and provides a long-term solution. Although there were concerns associated with potential related impacts of placing a barrier on the river (i.e. transportation, migration and movement of sediments) and creating a reservoir system (i.e. size, draw down, covering historic sites and traditional and existing fish camps, loss of riparian habitat).
2. Many interests in exploring technologies like Kinetic Hydro, biogas/biomass, wind, and geothermal. As well, there is an interest to see more analysis on emerging technologies i.e. small nuclear, battery systems, Electrical Thermal Storage and smart grids.
3. Many accepted that jurisdictional transmission interconnections might not be feasible at this time, although many are still interested in discussions related smaller transmission line connections to nearby grids such as Atlin and Skagway. Some are against transmission connection to another grid, while others were still interested in the ability to export or import power for a variety of different reasons.
4. Many interests in exploring benefits and risks of scenarios that are made up of a mixture of renewable projects, small hydro with storage and at least one or more pump storage project. This approach potentially distributes projects throughout the Yukon, some may qualify as Independent Power Production projects and it is likely projects would be built out or scaled out overtime, as needed thus spreading out the related economic benefits.
5. Some interest to explore efficiency and Demand Side Management and determine their role in meeting the future need.

6. Some requested more time to review the technical papers.

## DISCUSSION AND CONCLUSION

The Phase 1 engagement process sought to 1) proactively lead the Next Generation Hydro conversation, 2) engage audiences with factual information by a variety of suitable means, 3) educate a group of technical professionals from First Nations, government and stakeholder groups through a series of technical workshops and 4) find ways to help interested audiences reason through the information in a way that parallels the process taken by the technical team and the YDC Board. Engagement saw a number of Yukoners dedicate themselves to learning more about Next Generation Hydro and in doing so provided YDC comments. This input is summarized as themes in this document. The process demonstrated the keen interest of those engaged in Phase 1 and their interest in continued dialogue regarding Yukon's long-term energy future.

The majority of the input summarized in this report was received at the technical workshops, Whitehorse public speaker events and the community tour. The themes also reflect much but not everything that YDC has heard from First Nations, as some of these conversations are confidential.

In general, the input received confirms that there is a strong interest in avoiding the use of fossil fuels to produce electricity in the future. Although on occasion nuclear was mentioned, the majority of comments received suggest a strong interest in a renewable energy solution or combination of solutions. The pros and cons of Next Generation Hydro were discussed. The pros of Next Generation Hydro are it could provide reliable, affordable and long term renewable energy. The cons related to the sizable reservoirs that will change either a lake or river ecosystem substantially and the affected values and uses of these lands. As well, there was concern that dam structures would become barriers to natural river systems and fish migration including Salmon (on all but one option). Mitigation would be required to compensate for a variety of environmental, social and economic impacts.

As an alternative to Next Generation Hydro, two renewable portfolios of wind, solar, small hydro with storage and peak fossil fuel were reviewed. At the technical workshops, those in favor of the renewable portfolio (with pump storage) felt the pros of this option included: the ability to build the portfolio out in stages and as needed, the possibility of projects being in multiple locations yielding more local economic benefits to more communities,

the ability of the projects to be led by First Nations and others as Independent Power Projects and the desire to see smaller reservoir footprints. The cons of this approach were: reservoir impacts, river barrier impacts (require mitigation), multiple rivers affected (approx. 7) and a slightly larger cumulative foot print compared to Next Generation Hydro.

As detailed in the main body of this report, there was a desire to develop other portfolio options (adding other types of renewables and technologies) with different methodologies (i.e. life cycle cost). Several participants also wished to learn more and discuss further the role of transmission and its ability to help meet future need.

Input in Phase 1 suggests that dialogue improved as more information became available to answer participants' questions. Thus, moving forward it would be valuable to address outstanding interests and concerns that have been raised with more factual information. Guided by the technical workshop discussions (see workshop reports), it is clear there are some high-level knowledge gaps that could use more factual analysis, technical debate and public discussion. For example, what else can be learned about the pros and cons of the different types of hydro technologies: kinetic, micro, run-of-river, small, medium, large and pump storage hydro, and how each affects different types of energy portfolio scenarios? How can the impacts associated with a hydro (small, medium and pump) be mitigated? What does it mean to change a lake or river into a reservoir-based habitat? What type of ecosystems are these? What is lost from the affected natural ecosystem? What might the impacts be to heritage areas, trap lines, and private lands? How might emerging-technologies, other renewables and even nuclear contribute to future needs 20 to 50 years out?

These are a few of the many other questions raised. Further ongoing and consistent dialogue would honor the time and commitment of those Yukoners that have already participated in this process and other related government and nongovernment energy discussions. Maintaining a fact-based discussion would support ongoing dialogue, which is a critical component to ensuring Yukon's future energy needs are met.