



Haida Gwaii Community Electricity Plan



Working Group Meeting
June 1, 2007



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Compass Resource Management



About today...

Objectives

To create some preliminary electricity supply & DSM (conservation) bundles that will be used to help frame and elicit feedback during the next round of community meetings.

- To review some preliminary evaluation criteria
- To assess the performance of some illustrative *mock* bundles
- To gain insight into what elements of the bundles are best serving WG members' interests



Workshop Agenda

Overview & Update	30 mins
Review *Mock* Bundles	60 mins
Undertake *Mock* Exercises	60 mins

Lunch (~11:30am) **180 mins**

Results from the Exercises (2:00pm) **90 mins**

Break **15 mins**

Creating Preliminary Bundles **60 mins**

Next Steps (~5:00pm) **30 mins**




Structured Decision Making

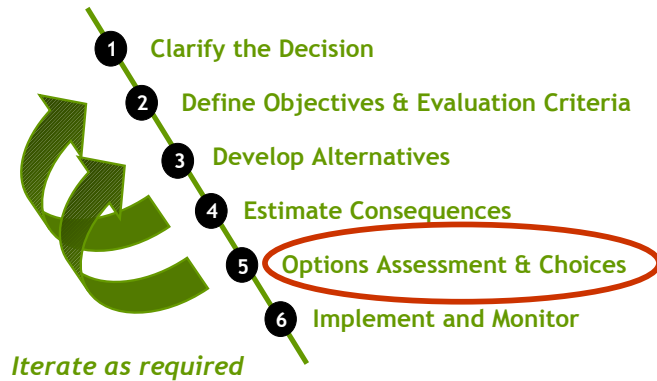
“A formalization of common sense for decision problems which are too complex for informal use of common sense.”

(Ralph Keeney)

- A set of core steps
- Structuring tools
- Integration of facts and values
- Flexible, scaleable and iterative



Steps in SDM



Structured Decision Making

- Focuses on **what matters**
- Improves the quality & transparency of **judgments**
- Generates creative **alternatives**
- Explores **uncertainties** and the best balance across **multiple objectives**
- Ensures a **decision-relevant information base**
- Integrates **analysis** with **deliberation**



Recent SDM Case Studies

- BC Hydro – WUPs & IEP
- DFO Wild Salmon Policy
- MOE – Risk Management & Planning
- Environment Canada - Climate Change Adaptation Planning
- MOF - Mountain Pine Beetle Mitigation Plans
- ILMB – Conservation Planning
- First Nations Consultation and Accommodation Agreements
- Community Resource Planning
 - TEK NSF Project
 - Adaptive Management Plans – Jumbo Glacier Resort
 - TOL WMP
 - Kimberley Wildfire Risk Reduction Planning



Mock

Electricity Supply & DSM

Bundles



Mock Bundles

Assumptions:

- Demand forecast uses high growth community growth (peak = 23 MW; Yr 20 energy demand = 113,100MWh)
- Resource locations are not site specific
- Do not deal with the sequencing of when new supply options would be added
- Constant energy prices
- No allowance for technological improvements
- Meeting minimum requirements within BC Energy Plan (e.g. 50% of future growth from DSM, no net GHGs)

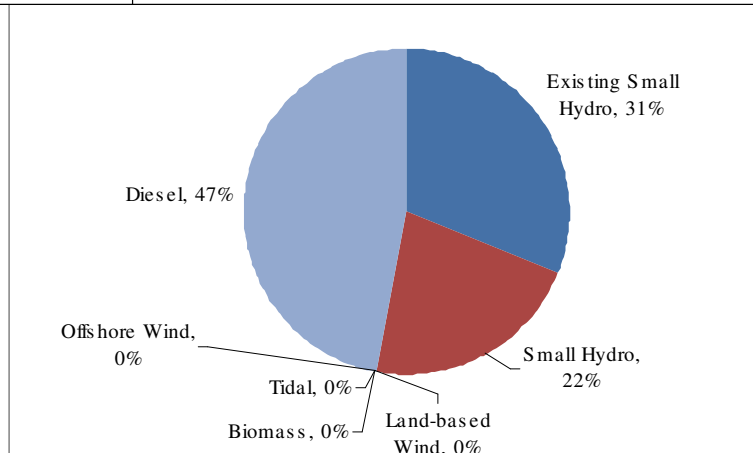


Mock Bundles

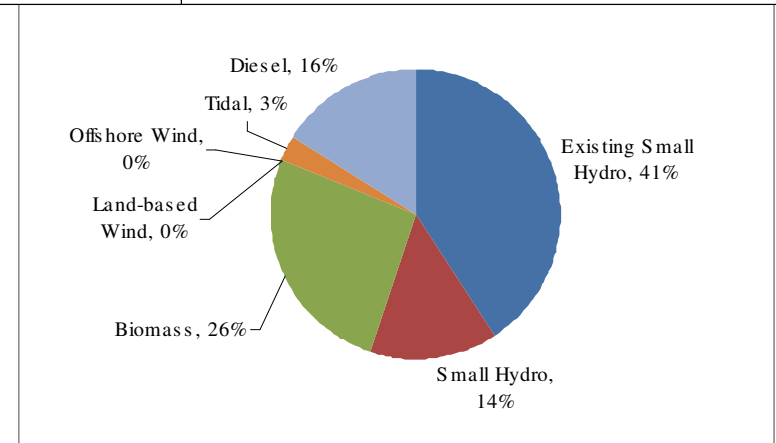
Assumptions:

- Existing small hydro facility is included across all the bundles
- New Diesel generators (ordered) will be installed and used to varying degrees (incl. voltage stability and emergency backup)
- That there is available supply of the various resource types in the bundles

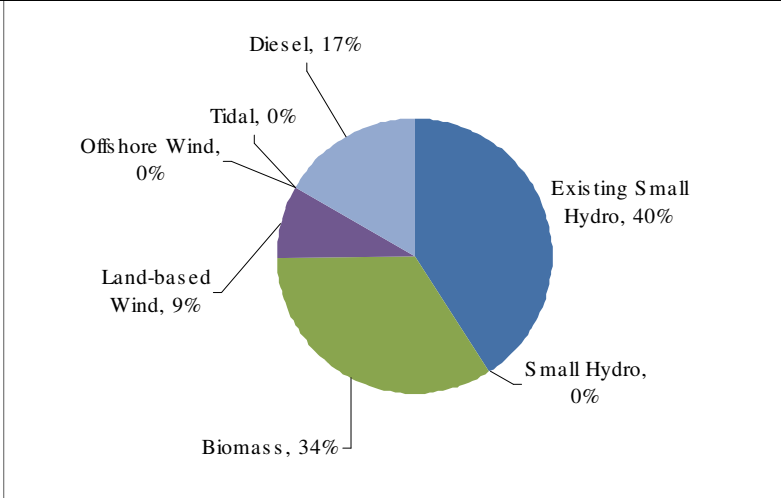
Bundle ID	1 – Energy Plan
Rationale	To meet the min requirements of the BC Energy Plan
Key Features	50% renewables No net GHG emissions
DSM	0% of existing 50% of growth



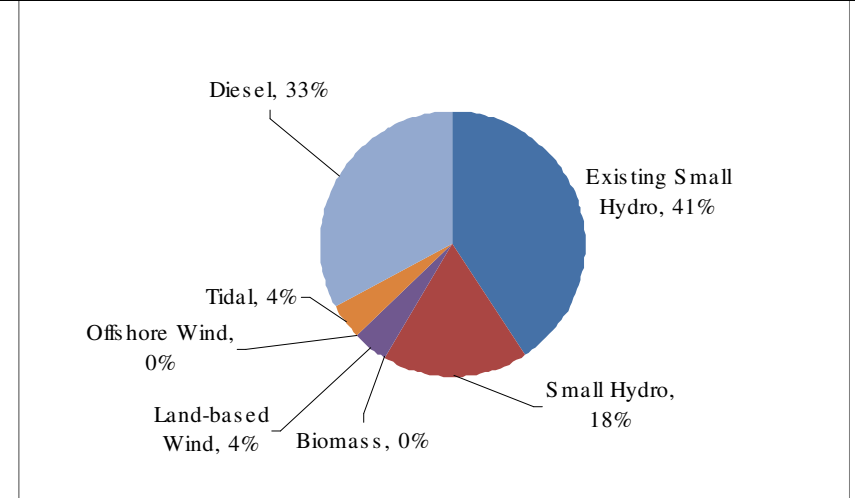
Bundle ID	2 - FBAU
Rationale	Future business as usual (FBAU) for BC Hydro; meeting their environmental & social policies
Key Features	90% clean energy target More emphasis on DSM
DSM	40% of existing 50% of growth



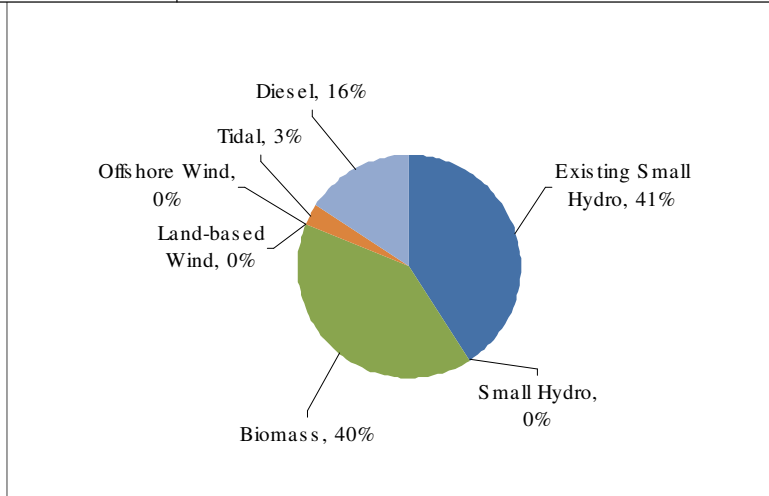
Bundle ID	3 – Mix 3
Rationale	Diverse Mix of renewables
Key Features	
DSM	40% of existing 50% of growth



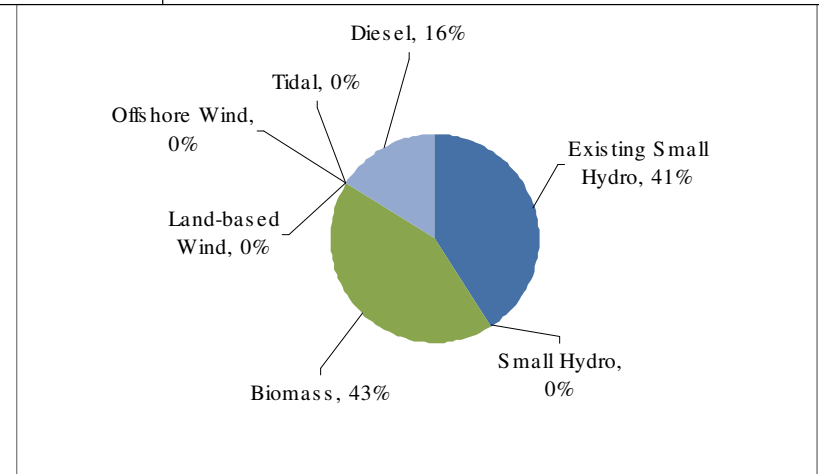
Bundle ID	4 – Mix 4
Rationale	Diverse Mix of renewables
Key Features	
DSM	40% of existing 50% of growth



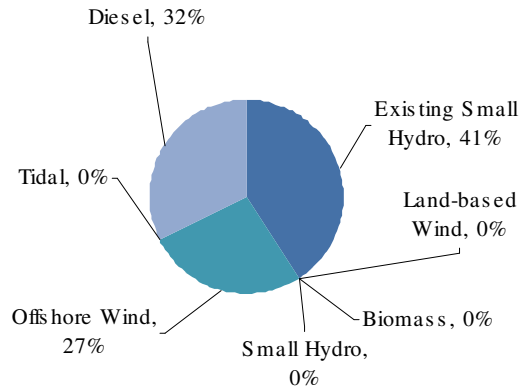
Bundle ID	5 – Mix 5
Rationale	Diverse Mix of renewables
Key Features	
DSM	40% of existing 50% of growth



Bundle ID	6 – Connect grids
Rationale	Connect grids together and stabilize with biomass plant in between
Key Features	Upgrade distribution system in order to connect grids
DSM	40% of existing 50% of growth



Bundle ID	7 – Offshore wind
Rationale	Single offshore wind project (not connected to mainland)
Key Features	
DSM	40% of existing 50% of growth



Evaluation Criteria

***Mock* Bundles**



Evaluation Criteria

Interest Area	Evaluation Criteria	Units	What's Better
Cost	Unit Energy Cost	\$/MWh	L
Service Quality	Index	#	H
GHG Emissions	CO2 equivalent emissions	kilotons/yr CO2e	L
Local Air Emissions	PM10	tons/yr (PM10)	L
Land Area	Land Area	m2 (000)	L
Aquatic Area	Aquatic Area	m2 (000)	L
Jobs	Construction Jobs	Person-years	H
Jobs	Permanent Jobs	FT equivalent	H
Noise	Noise Scale (0=Best, 10=Worst)	Scale (0-10)	L
Visual Impacts	Visual Impact Scale	Scale (0-10)	L
Food Harvesting Impacts	Food Harvesting Impact Scale	Scale (0-10)	L
Innovation / Leadership	Innovation Scale	Scale (0-10)	H
Sustainability	% Dependable Peak By Renewables	%	H



**Performance of
Mock Bundles**



Mock Bundles

See spreadsheet



Mock Exercise

Value-Based Rankings



Mock Exercises

Purpose

- To provide a forum to learn, share and express preferences about electricity & DSM options
- To help frame subsequent discussions and better highlight the strengths and weaknesses of the bundles and how they are characterized
- The resulting discussions will serve as input to help generate ideas for preliminary bundles to elicit broader community feedback



Mock Exercise

Direct Ranking

- STEP 1: Rank each of alternative from #1 (best) to #5 (worst). No ties allowed.
- STEP 2: Distribute 100 points for the #1 (best) ranked bundle
- STEP 3: Distribute a lesser amount of points for the next best ranked (#2) bundle relative to #1. Repeat for remaining portfolio (#3 through #5)
- Check:** Do a check on the relative difference between points with other rankings (e.g. #2 versus #5, etc.)



Mock Exercise Direct Ranking

Alternative	Rank	Weight
BCEP	1	100
FBAU	5	5
Mix 3	2	95
Mix 4	4	10
Connect Grids	3	50
Offshore Wind	6	1



Mock Exercise Swing Weighting

Purpose:

- Provides an alternative means to assess resource options according to the performance measures
- Provides a way to gain insight into the relative importance of each performance measure (PM) according to the improvements (**worst to best**) that can be made
- “Swing” refers to the importance of moving **one** PM from its worst to best value



Mock Exercise Swing Weighting

STEP 1: Rank #1 the performance measure that is most important to you to change from worst to best.

Repeat for #2, #3,

For Example....



Mock Exercise Swing Weighting

STEP 2: Distribute 100 points to the Rank #1 performance measure.

Distribute whatever proportion less than 100 to the Rank #2 PM according to its importance relative to Rank #1

Distribute proportion for Rank #3, must be less than Rank #2

Repeat for all the PMs...e.g.



Mock Exercise Swing Weighting

PM		Units	Worst	Best	Rank	Weight
Unit Energy Cost	L	\$/MWh	\$ 149	\$ 108	2	90
CO2 equivalent emissions	L	kilotons/yr CO2e	31	8	1	100
PM10	L	tons/yr (PM10)	25	8	3	85
Land Area	L	m2 (000)	30	3	5	50
Aquatic Area	L	m2 (000)	35	0	9	25
Construction Jobs	H	Person-years	66	119	6	49
Permanent Jobs	H	FT equivalent	49	84	4	80
Noise Scale	L	Scale	7	3	7	40
Visual Impact Scale	L	Scale	3	1	8	30
Food Harvesting Impact Scale	L	Scale	3	0	10	10
Innovation Scale	H	Scale	0	1	12	4
% Dependable Peak By Renewables	H	%	11%	26%	11	7



Mock Exercise Swing Weighting

Results...



Next Steps



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