

Customer Based Generation

June 21, 2002

AGENDA

Topic

Presenter

Time



• Introduction

Bev Van Ruyven

8:30



• Welcome

Bev Van Ruyven

8:35



• Overview

Al Boldt

8:45



• Eligibility

Terry McCullough

9:00



• Pricing

Rohan Soulsby

9:30

• Break

10:00



• Green Energy

Jim Scouras

10:15



• Interconnection

Ralph Zucker

10:45



• Q&A

Bev Van Ruyven

11:15

• Closing Remarks

Larry Bell

12:15

Introduction

- Thank you all for coming today, it is good to see so many people interested in this program.
- Customer Based Generation represents a very important first step for BC Hydro in terms of resource acquisition.
- We want to invite you to participate in today's workshop by asking questions and providing feedback.
- The structure for today is:
 - about 5 minutes for several burning questions directly after each speaker
 - then an hour at the end for a question and answer session

Introduction continued

- We may not have all the answers
- Or the program perfected
- We want to proceed
- There is value for both our customers and BC Hydro

Purpose of Today's Workshop

- Customer Based Generation - a part of BC Hydro's resource portfolio
- Review material related to the Request for Qualification
- All material presented today will be available on the web site
- The workshop will be recorded and the Q&A will be transcribed, edited for clarity and posted on the web site within 1 week

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BC Hydro Resource Approach

- Green Energy Call 2001
 - 43 proposals
 - 21 Energy Purchase Agreements signed to date
 - <650 GW.h
- Customer Based Generation May 2002
- Green Energy Call October 2002
- Annual calls to meet domestic growth

BC Hydro Energy Acquisition

2003 - 2004

May	June - November	December - February
Issue CBG and Green Call	<div data-bbox="724 601 1335 729" style="text-align: center;">Review of Submissions and Selection</div> <div data-bbox="933 768 1238 896" style="text-align: center;">Update Ceiling Price September</div>	<div data-bbox="1335 929 1879 1068" style="text-align: center;">Tender Evaluation, Selection and Signing</div>

9 months from Call to signed EPA

Customer Options for Generation

- Customer Based Generation Call
 - Competitive call with ceiling price
- BC Hydro Power Smart
 - For self generation load displacement
 - Competitive incentive based
- Green and Alternative Energy
 - Competitive call with ceiling price
- Selling to Power Marketer
 - Competitive market based

Customer Based Generation Overview

- One of several resources to help meet domestic load growth
- Competitive Tender process
- Launched May 31, 2002 and signed EPA's by February 2003 - 9 months
- Target of 800 GW.h/year ~ 100 MW capacity
- COD by 2005 November 1

Process and Schedule

May 31 - July 12 6 weeks	July 12 - Sept 6 8 weeks	Sept 6 - Nov 22 11 weeks	Nov 23 - Feb 28 14 weeks
Request for qualification Period			
RFQ Workshop Jun 21	Review of Submissions and Selection	CFT Workshop Oct 4	
		Call For Tender Period	
		Review Ceiling Price	Tender Evaluation, Selection and Signing

9 months from RFQ to signed EPA

QUESTIONS?



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RFQ Stage: Evaluation

- Qualification Documents Submitted by Customer Sponsor
- Evaluated for :
 - Customer Eligibility
 - Project Eligibility
 - Owner/Operator Capability
 - Project Status



Eligibility: Customer

Mandatory Requirements:

- Customer sponsor must be 1821, 1852, 1200, 1201, 1210 or 1211 customer
- Service used for normal operations
- Service at the site for at least 12 months

Eligibility: Customer Involvement

Open to IPPs

Mandatory Requirements:

- Customer involved in **at least one** of the following ways:
 - At least 25% Ownership of Project
 - At least 25% of Fuel (Heat Content)
 - At least 10% of the Heat Input
- Designed to qualify for Class 43.1 tax status
- Power plant integrated into Customer's facilities/Customer dependant on power plant



Eligibility: Project

Mandatory Requirements:

- New or Incremental Energy
- Close Proximity
- Proven Technology
- Submission of Qualification Documents:
 - by 4 PM July 12, 2002
- COD by November 1, 2005



Eligibility: Owners/Operators

Project-Related Requirements:

Must Demonstrate

- Technical Experience: Track Record
- Financial Capability: Rated
Unrated



EPA Terms and Conditions (I)

- Standard Form EPA: Appendix to CFT
- Bidders sign Standard Form EPA if selected in January 2003
- Standard Form EPA will be issued in September 2002

EPA Terms and Conditions (II)

- Bids not selected may be selected later
- Selected projects expected to meet milestones progressing to COD
- Project can miss one milestone
- Miss second milestone, BCH calls on next bidder in the ranking
- This bidder can accept or reject the award

EPA Terms and Conditions (III)

- 10 to 20 year contract term
- COD no later than 2005 Nov 1
- Development security deposit required
- Conditions subsequent in EPA include:
 - permitting, financing
 - interconnection agreement & facilities agreement
 - site acquisition/tenure

EPA Terms and Conditions (IV)

- Bidder supplies contracted MWh/h capacity
- BCH buys output as per contracted capacity
- Sales to third parties permitted: upfront nomination
- Irrevocable Recall Option:
 - 20% of contracted capacity, Notice Requirement, \$2/MWh on remaining 80% delivered to BCH
- Metering Requirements:
 - ensure accurate billing of each load
- Inflation Adjustment: 1/2 CPI (all in)

EPA Terms and Conditions (V)

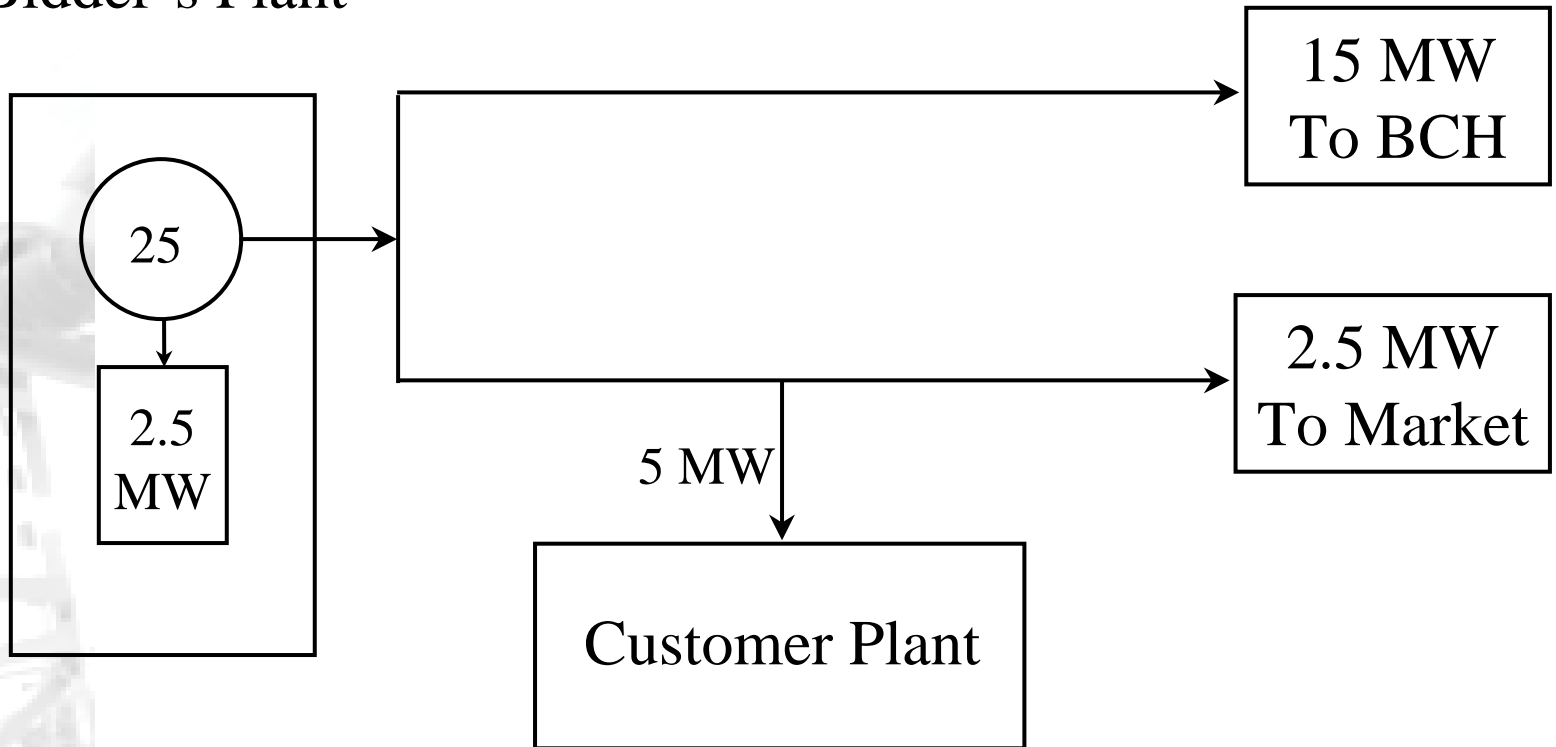
- Bidder bears fuel supply risk
- Bidder bears environmental risk and liabilities: no flow-throughs
- Green value purchased by BCH, but only if operation continues to meet green criteria
- GHG emission reductions at BC Hydro's facilities retained by BCH
- Binding arbitration for disputes

Allocation of Output Example 1

- Project capacity: 25 MW
 - Principle: BC Hydro receives and pays for contracted capacity
 - Station service: 2.5 MW
 - Capacity contracted to BC Hydro: 15 MW
- Bidder Controlled Output:
 - Load Displacement: 5 MW
 - Available for sale to the market: 2.5 MW

Example 1 Schematic

Bidder's Plant

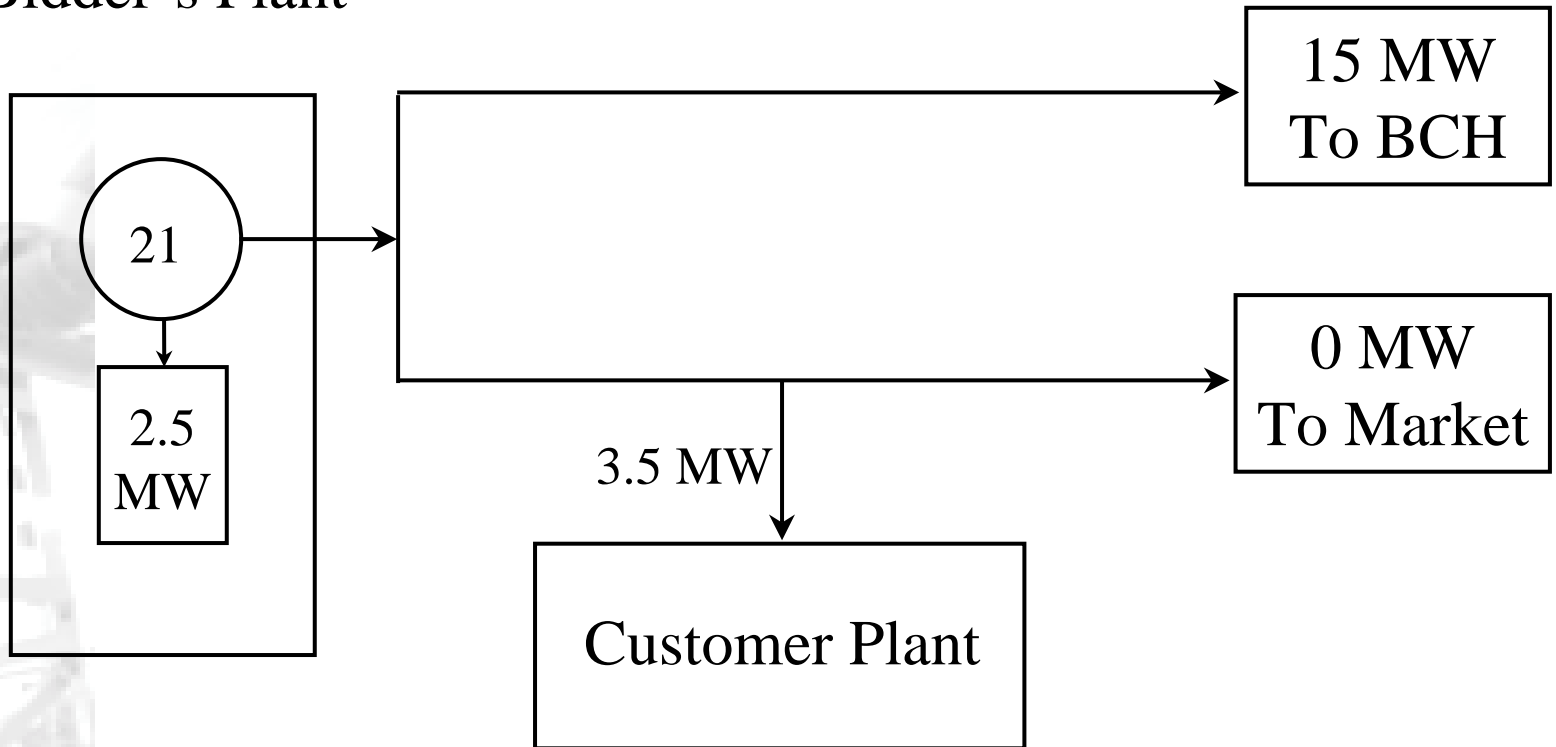


Allocation of Output Example 2

- Project Capacity: 25 MW
- Bidder chooses to turndown to 21 MW:
 - Principle: Bidder bears consequence of reduced output due to voluntary turndown
 - Station Service: 2.5 MW
- Capacity contracted to BC Hydro: 15 MW
- Bidder Controlled Output:
 - Load Displacement: 3.5 MW
 - Available for sale to the market: 0 MW

Example 2 Schematic

Bidder's Plant

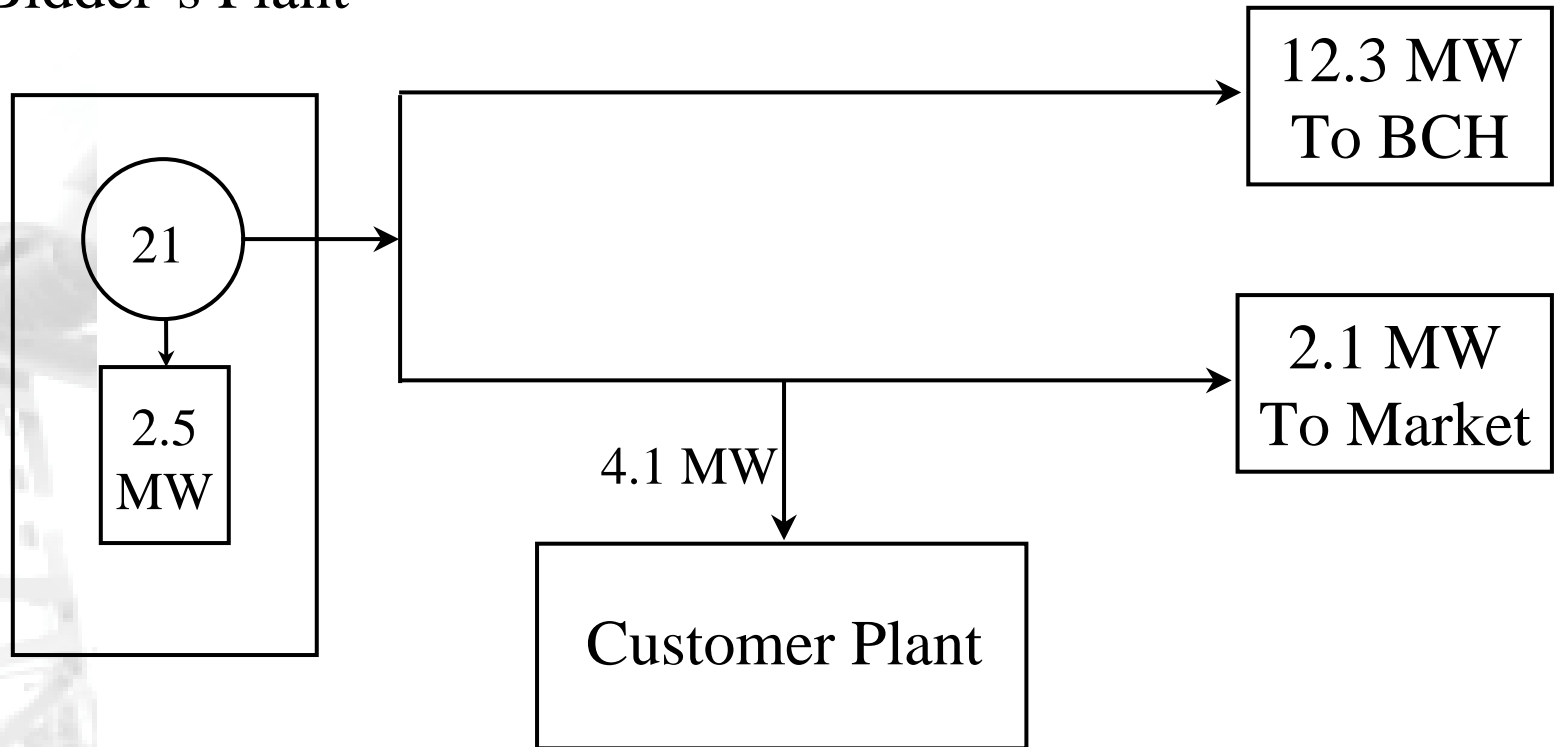


Allocation of Output Example 3

- Project Capacity: 25 MW
- Partial Forced Outage or Force Majeure:
 - Output reduced to 21 MW
 - Principle: Instantaneous pro-rata allocation of reduced output
 - Station Service: 2.5 MW
 - Capacity contracted to BC Hydro: 12.3 MW minimum delivery $((21-2.5)/(25-2.5))*15$
- Bidder Controlled Output:
 - Load Displacement: 4.1 MW
 - Available for sale to the market: 2.1 MW

Example 3 Schematic

Bidder's Plant

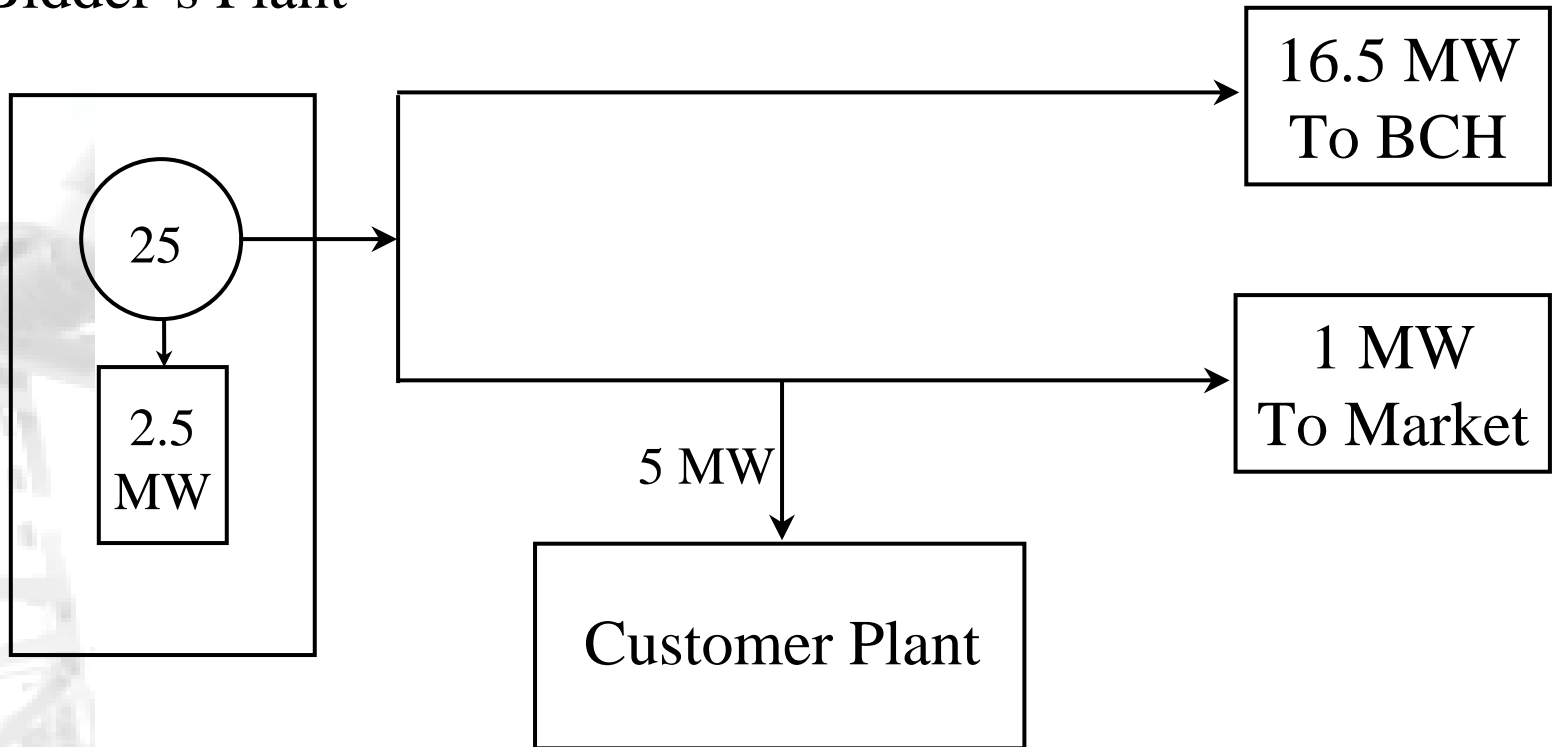


Allocation of Output Example 4

- Project Capacity: 25 MW
- Increase delivery to BCH during high load hours:
 - Principle: Increase delivery up to 110% of contracted capacity
 - Station Service: 2.5 MW
 - Capacity contracted to BC Hydro: 16.5 MW (1.10*15)
- Bidder Controlled Output:
 - Load Displacement: 5 MW
 - Available for sale to the market: 1 MW

Example 4 Schematic

Bidder's Plant



QUESTIONS?



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Presentation Overview

- **Ceiling Price:** maximum ranked price that will be considered.
- **Ranked Bid Price:** to enable meaningful comparisons between competing bids
- **Payment Price:** Bid Price +/- shaping adjustments
- Examples
- Questions & Answers

Ceiling Price

- Based on LRMC of a CCGT
- Ceiling currently = 49 \$/MWh (2003 C\$)
- Current price based on BCH's Sept 2001 long term electricity price forecast
- Price review in Sept 2002 could possibly increase the ceiling, but will not reduced

Ceiling Price

- Methodology for calculating Ceiling price will be published on web
- Ceiling Price is *not* an open offer to buy
- Competition will likely be limiting factor
- BCH recognizes project sponsors have other opportunities (i.e. sell into market)

Ranked Bid Price

- Bids need to be adjusted to provide meaningful comparisons between projects
- Adjustments to Bids include:
 - Location Adjustments
 - Environmental Impact Adjustments
- Ranked bid prices are compared to the \$49/MWh Ceiling Price **and** to the ranked bid prices of competing bids

Location Adjustments

- Area Location Adjustment:
 - Both capital & loss impacts are site specific
 - Projects may increase or decrease local line losses and capital costs
- Bulk Location Adjustment:
 - Preliminary estimates are provided
 - Boundaries may be further defined in 2002 CFT
- Network Upgrade Cost Adjustment
- Location adjustments are made for ranking purposes only...no impact on payments!

Environmental Adjustments

- **Green Criteria:** Bids for qualified projects will be reduced by 5 C\$/MWh for ranking purposes
- **Greenhouse Gas (GHG) Intensity:** Bids for qualified projects will be reduced by up to 3 C\$/MWh for ranking purposes
- Environmental adjustments are made for ranking purposes only

CBG Pricing Example: Ranked Bid Prices

	Proponent #1	Proponent #2	Proponent #3
Location	Nanaimo	Kamloops	Vancouver
Green Criteria Qualified?	No	Yes	No
GHG Intensity Offsets Qualified?	Yes, at 2 \$/MWh	Yes, at 3 \$/MWh	No
Bid Price	\$54.00	\$52.00	\$48.00
Bulk Location Adjustment	-\$2.00	\$2.50	
Area Adjustment	-\$1.80	\$1.40	\$0.50
Network Upgrade Cost			\$1.00
Green Criteria Adjustment		-\$5.00	
GHG Intensity Adjustment	-\$2.00	-\$3.00	
Ranked Bid Price	\$48.20	\$47.90	\$49.50
Ranking Price < Ceiling Price?	Yes	Yes	No
Ranking	Second	First	Bid Rejected

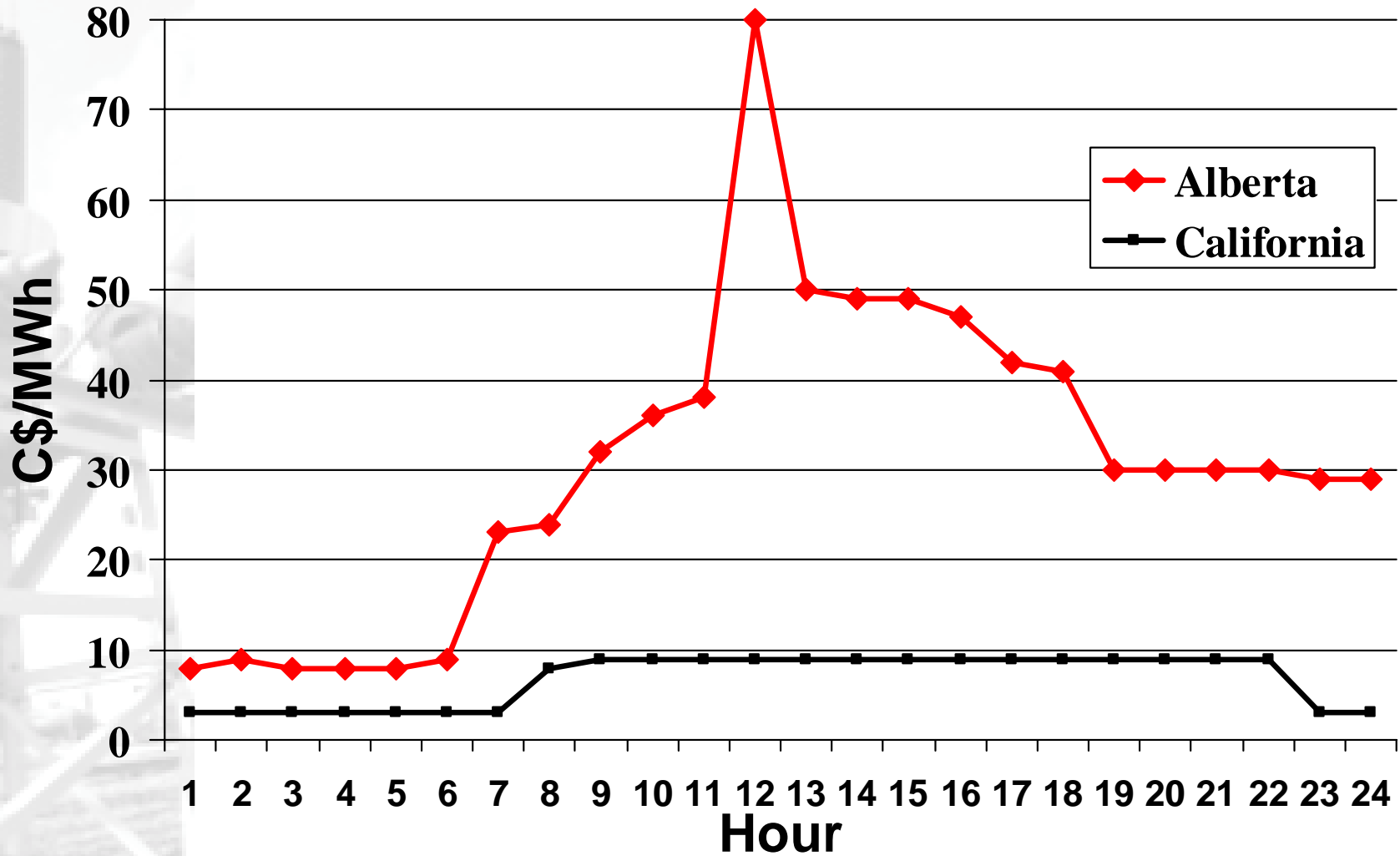
Payment Adjustments (I)

- **Green Criteria Non-Performance:**
Projects credited with a bid reduction (for ranking purposes), that fail to meet the green criteria, will have their price reduced by 5 C\$/MWh
- **GHG Intensity Non-Performance:**
Projects credited with a bid reduction, that fail to realize the offsets, will have their price reduced to reflect the shortfall

Payment Adjustments (II)

- **Price Shape Adjustment:** To encourage economically efficient deliveries, payment prices are shaped to approximate actual time-specific electricity prices
- **Inflation:** Payments will be adjusted by an annual inflation rate = 50% of CPI
- **Recall Option:** Bidders may recall up to 20% of their contract, for a price reduction of 2 C\$/MWh on remaining deliveries

Hourly Price Example: 7 Jun 2002

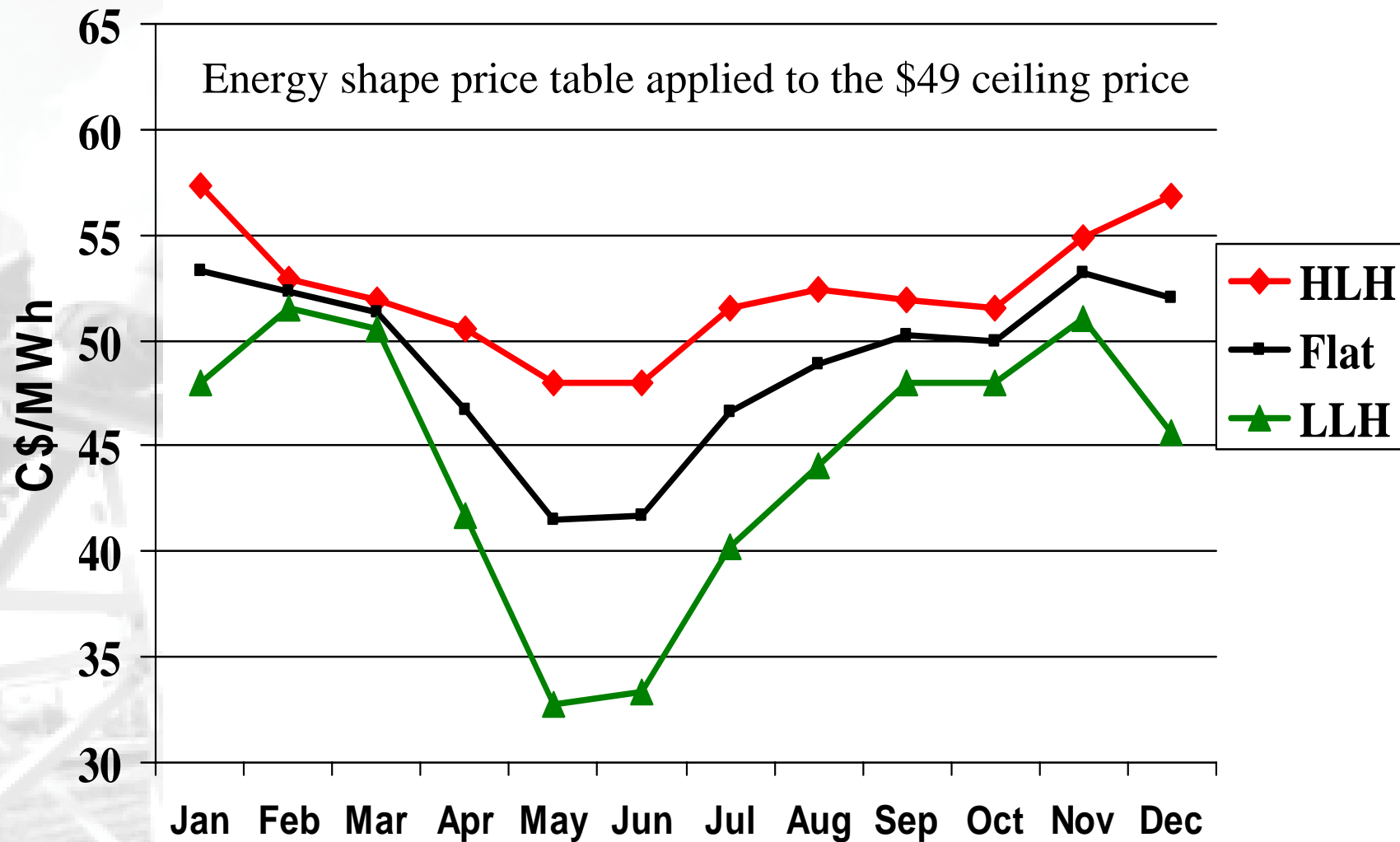


Energy Shape Price Adjustments

6:00 am - 10:00 pm M-Sa,
excluding Statutory Holidays

Month	Heavy Load Hour (HLH)	Light Load Hour (LLH)
January	117%	98%
February	108%	105%
March	106%	103%
April	103%	85%
May	98%	67%
June	98%	68%
July	105%	82%
August	107%	90%
September	106%	98%
October	105%	98%
November	112%	104%
December	116%	104%
Average	106.8%	91.8%

Annual Price Variation



CBG Pricing Example: Post C.O.D. Payment Adjustments

			Proponent #1	Proponent #2
Failure to meet Specified Green Criteria?			N/A	Fail
Portion of GHG Intensity Offsets Realized			50% of 2 \$/MWh	100%
Proponent Exercised Recall Option?			Yes	No
Bid Price			\$54.00	\$52.00
Green Criteria non-Performance Adjustment				-\$5.00
GHG Intensity non-Performance Adjustment			-\$1.00	
Recall Option Adjustment			-\$2.00	
Base Price before Price Shape Adjustment			\$51.00	\$47.00
Project Generation Profile			Flat annual block	HLH only, all months
			Price Shape Adjustment	First Year Payment Prices (after Price Shape Adjustment)
Jan	HLH	117%	\$59.67	\$54.99
	LLH	98%	\$49.98	No LLH Deliveries
Feb	HLH	108%	\$55.08	\$50.76
	LLH	105%	\$53.55	No LLH Deliveries
	⋮	⋮	⋮	⋮
Dec	HLH	116%	\$59.16	\$54.52
	LLH	93%	\$47.43	No LLH Deliveries
Effective Average Price Received			\$50.97	\$50.17
			[Differs from \$51.00 due to round-off error]	[\$3.17 premium received due to delivery shape.]
Later Year Payment Prices = First Year Payment Prices adjusted by 50% of CPI				

Summary

- Ceiling Price of 49 \$/MWh is based on BCH's LRMC for electricity. This may be increased in Sept 2002
- *Not* an open offer to buy any energy made available for under \$49/MWh... only the lowest priced projects will be selected to a max. of 800 GWh/yr.
- For ranking purposes, bids will be adjusted for location and environmental factors
- Payment prices will reflect time of delivery, inflation, recall, and environmental performance

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Overview

- Defining Green
- Green Acquisition
- GHG
- Treatment of Green within CBG
- Link with next Green Call
- Questions

Defining Green

- Global View
- Regional View
- Marketing View
- Technology View

- Regulations do not automatically equate to a project being deemed green

Green Acquisition (I)

- Acquire a credible green energy portfolio
- Test and advance emerging resources and technologies
- Meet corporate commitments
 - 10% voluntary commitment
 - BC Hydro Service Plan
- To date: <650 GW.h signed with 21 IPPs

Green Acquisition (II)

- Several promising efforts to certify or define green power
 - Environmental Choice - Ecologo
 - Pembina Institute - Guidelines
 - Scientific Certification Systems (USA)
 - Center for Resource Solutions, Green-e (USA)
- No clear industry - National Standard
- Certification after facility is operational

Green Acquisition (III)

- **Upfront evaluation before construction**
- **Consistent Principles:**
 - Renewable
 - Low environmental impact
 - Socially responsible
 - Licensable
- **BC specific flora/fauna concerns**
- **Composite technology specific criteria:**
 - Small hydro, wind, geothermal, solar, biogas, biomass
- **Organized according to principle, descriptor and compliance evidence**

Green Acquisition (IV)

- EPA structured to ensure ongoing commitment to Composite Green Criteria
 - Operations EMS required
 - Audit
- Compliance with Composite Green Criteria, BC Hydro guarantees “greenness” for life of EPA. If proponent does not comply with the criteria we reduce payment by \$5.00/MWh

Biomass Principles

- Lowest environmental impact alternative or no other high-order use
- Displace a less efficient use of the waste
- Produce minimal (or reduce net) GHG emissions
- Derive energy from renewable, sustainably managed resources
- Conserve sensitive areas and endangered species
- Preserve or improve the overall regional air quality
- Project development has low environmental impact on land resources
- Commitment to continual improvement

Social Responsibility

Social Responsibility Principles:

- Communicate with First Nations
- Consult on community values
- Contribute to local community and economy
- Assure quality health and safety programs
- Operate in an ethical manner

GHG Intensity Adjustment

- Definition:

GHG emission reductions that arise from the displacement of higher GHG intensity electricity generation at existing BC Hydro thermal facilities

- Emission reductions occurring at BCH's facilities valued up to \$3/MWh
- Customer Greenhouse Gas Intensity = CGI
- GHG Adjustment =
 $\$3.00/\text{MWh} - (\$5.77/\text{tonne} * \text{CGI}/\text{tonne}/\text{MWh})$

GHG Offsets

- Definition:
GHG emission reductions that arise from the displacement of high GHG intensity activities directly at the customer site
- GHG benefit remains with the customer

CBG Green Timeline

July 12 - Sept 6 8 weeks	Sept 6 - Nov 22 11 weeks	Nov 23 - Feb 28 14 weeks
	<div data-bbox="710 415 1110 539" style="background-color: #008000; color: white; padding: 5px; text-align: center;"> Sept 9 - Green Info Provided </div>	
<div data-bbox="324 554 710 686" style="background-color: #d9e1f2; padding: 5px; text-align: center;"> Review of Submissions and Selection </div>	<div data-bbox="852 558 1290 696" style="background-color: #008000; color: white; padding: 5px; text-align: center;"> Oct 25 - Bidders Prepare and Submit Green </div>	
	<div data-bbox="1029 715 1483 858" style="background-color: #008000; color: white; padding: 5px; text-align: center;"> BCH Notifies Bidders no later than - Nov 8 - earlier if possible </div>	
		<div data-bbox="1483 872 1870 1013" style="background-color: #d9e1f2; padding: 5px; text-align: center;"> Tender Evaluation, Selection and Signing </div>

Post EPA Period: Remaining Green evidence received and evaluated under EPA contract terms.

CBG: Green Key Points

- All projects reviewed in identical fashion
- Customer receives 1 of 3 responses
- 2 weeks before final bid date
- EPAs include initial period (after signed)
- Clearer evidence for biomass and social

CBG and Next Green Call

- Next call for green energy projects:
October 2002
- Projects can be submitted to both opportunities
- Once a project is offered a contract in one process it is automatically removed from the other



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Overview

- Application and Schedule
- Process
- Customer Example
- Preliminary Study Deliverables
- Recall and Split Bid Features
- Agreements

Application:

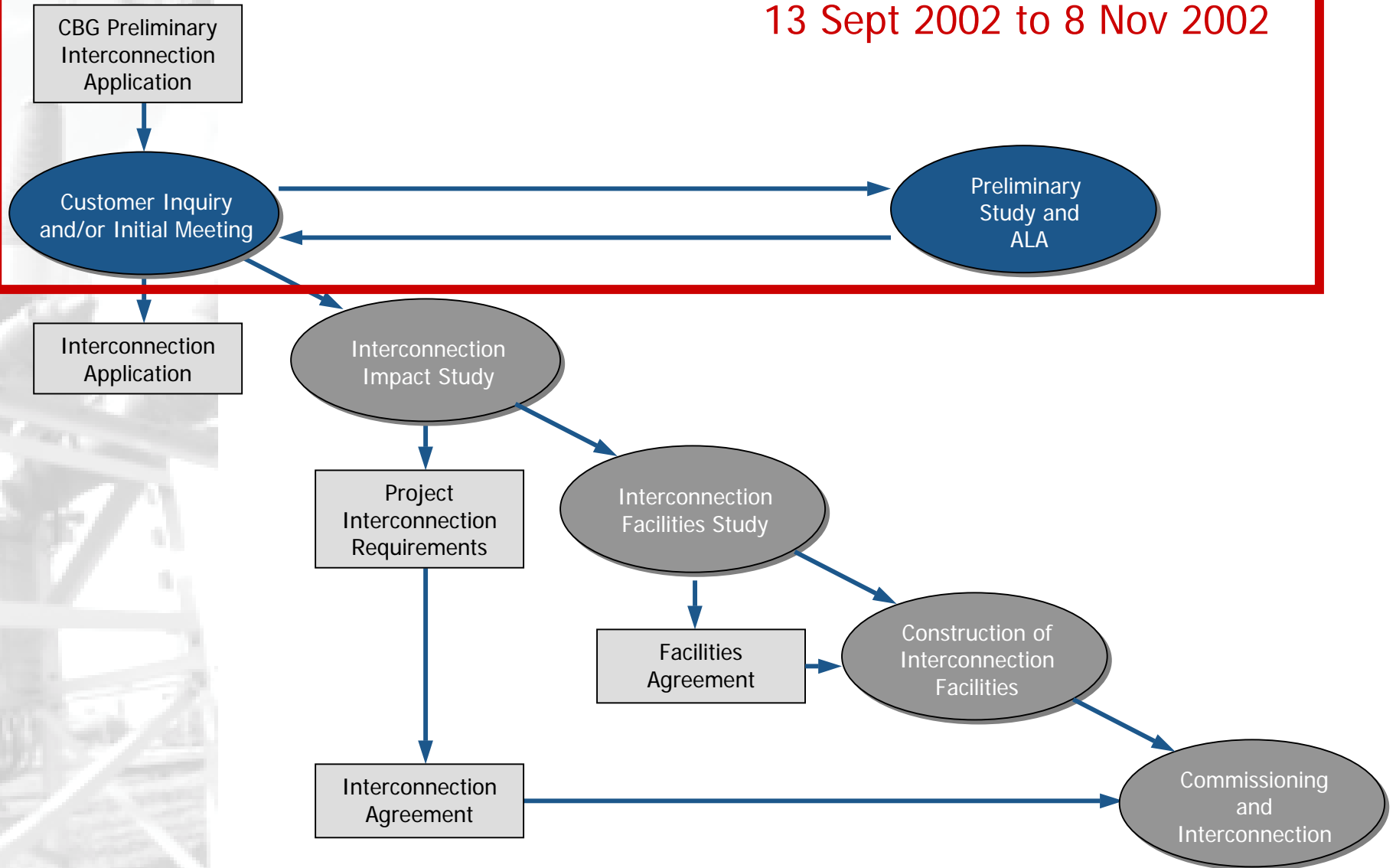
- All proponents are required to submit a Preliminary Interconnection Application Form to the Office of Generator Interconnections

Schedule:

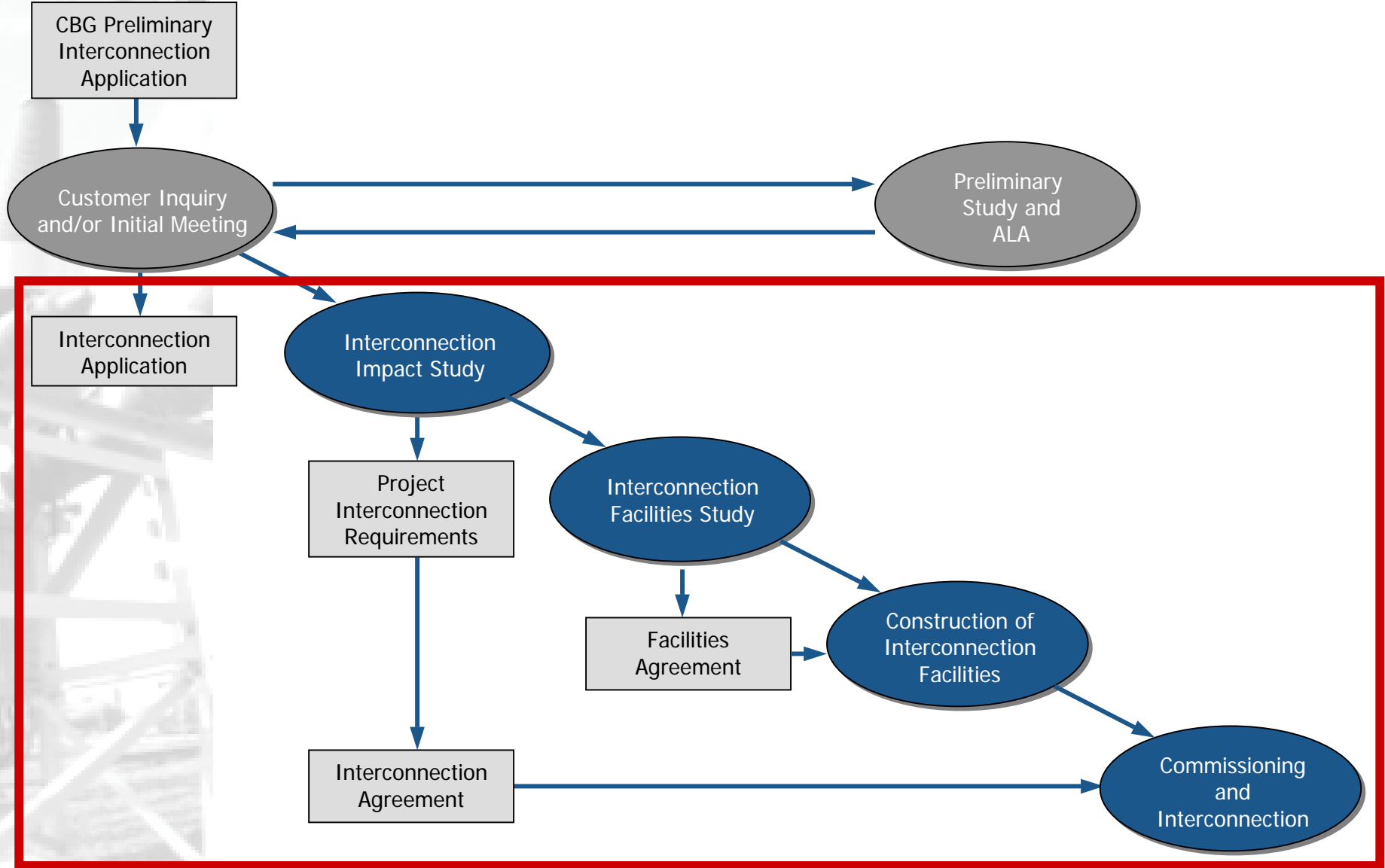
- 13 September 2002: Deadline for submission and acceptance of application
(incomplete submissions will result in delayed deliveries)
- 8 November 2002: Delivery of Preliminary Study and Area Transmission Location Adjustments
(for applications submitted and accepted on or before 13 September 2002)

BC Hydro's Generator Interconnection Process:

13 Sept 2002 to 8 Nov 2002



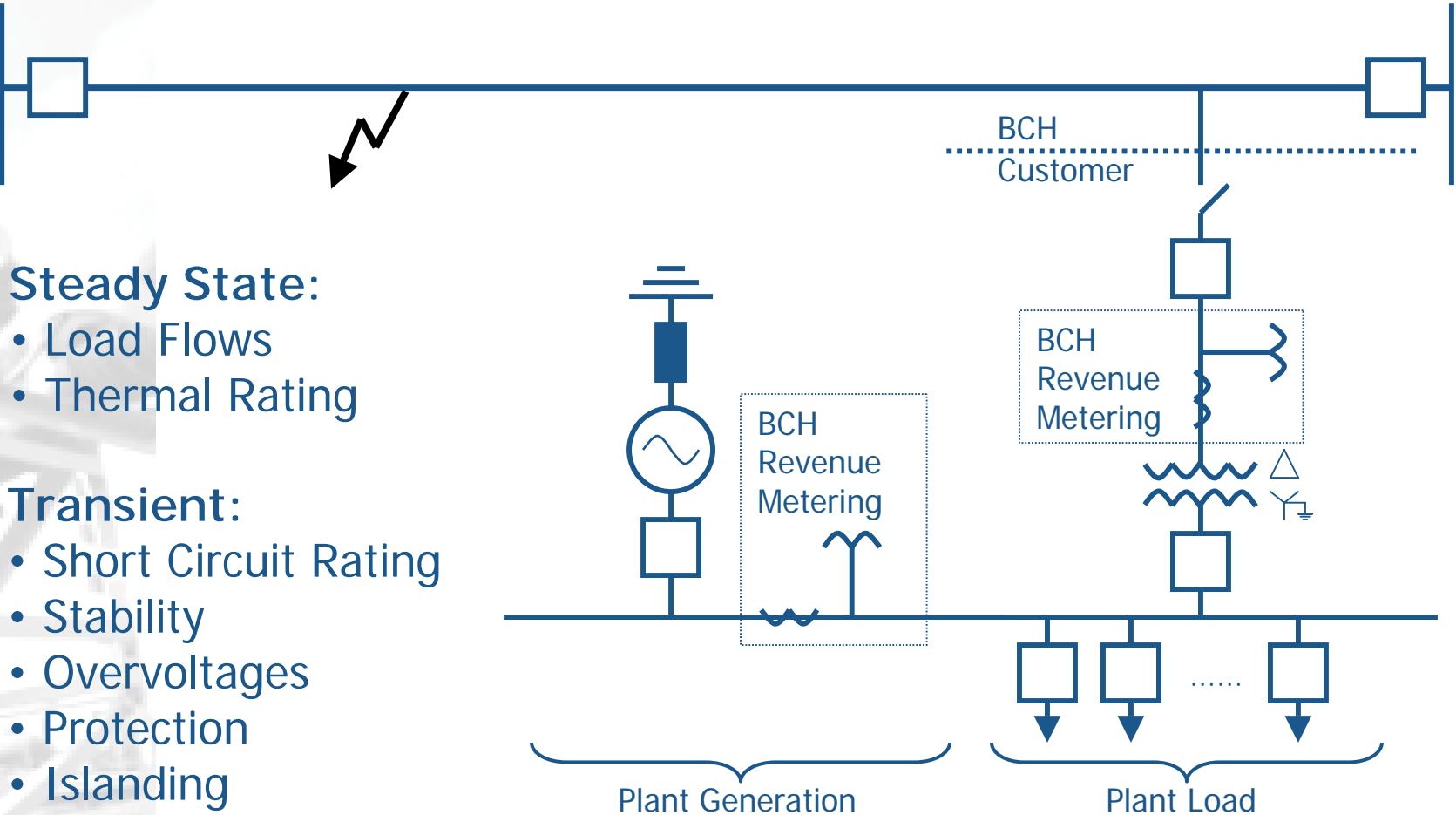
BC Hydro's Generator Interconnection Process:



Example: Customer Interconnection

BCH Station 'A'

BCH Station 'B'





Preliminary Study Deliverables:

- **Interconnection Cost**
(will not exceed 130% of estimate)
- **Schedule**
- **Area Location Adjustment**



Recall and Split Bid Feature:

- Wholesale Transmission Service
- Request Full Interconnection Capacity

Agreements:

- Interconnection Agreement
- Facilities Agreement

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Contact Us

- **For Customer Generation**
 - www.bchydro.com/customergergen for information
 - email: customergergen@bchydro.com
- **For Green Information**
 - Documents: www.bchydro.com/ipp/green/criteria
 - email: customergergen@bchydro.com
 - BC Hydro GHG offsets: Tim Lesiuk (604) 623-4254
- **Office of Generator Interconnections**
 - www.bchydro.com/interconnections
 - email: gen.connections@bchydro.com
- **Wholesale Transmission Service**
 - <http://gridops.bchydro.bc.ca/keycontacts.html>

Glossary of Terms

- ALA - Area Location Adjustment
- CBG - Customer Based Generation
- CFT - Call for Tender
- COD - Commercial Operation Date
- CPI (All Items) - Consumer Price Index
- EMS - Environmental Management System
- EPA - Energy Purchase Agreement
- FA - Facilities Agreement
- GHG - Green House Gas
- HLH - High Load Hours - 6:00 am - 10:00 pm Monday through Saturday, excluding Statutory Holidays
- IA - Interconnection Agreement
- IPP - Independent Power Producer
- LLH - Low Load Hours - All periods other than high load hours
- NUG - Non Utility Generator
- RFQ - Request for Qualification
- RPS - Renewable Portfolio Standard (related to Green Energy)