

# A Developer's Perspective on Renewable Energy Development in BC



Presentation to the Joint Public Advisory Committee

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# **Forward Looking Statement**



This presentation may contain "forward-looking statements" within the meaning of Canadian securities legislation and the United States *Private Securities Litigation Reform Act of 1995*. These forward-looking statements are made as of the date of this presentation and the Company does not intend, and does not assume any obligation, to update these forward-looking statements.

Forward-looking statements relate to future events or the anticipated performance of the Company and reflect management's expectations or beliefs regarding such future events and anticipated performance. In certain cases, forward-looking statements can be identified by the use of words such as "plans", "expects", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "believes", or variations of such words and phrases or statements that certain actions, events or results "may", "could", "would", "might" or "will be taken", "occur" or "be achieved", or the negative of these words or comparable terminology. By their very nature forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual performance of the Company to be materially different from any anticipated performance expressed or implied by the forward-looking statements. Such factors include various risks related to the Company's operations, which are detailed from time to time in the Company's interim and annual financial statements and management's discussion and analysis of those statements, all of which are filed and available for review on SEDAR at www. sedar.com. Although the Company has attempted to identify important factors that could cause actual performance to differ materially from that described in forward-looking statements, there may be other factors that cause its performance not to be as anticipated. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements.

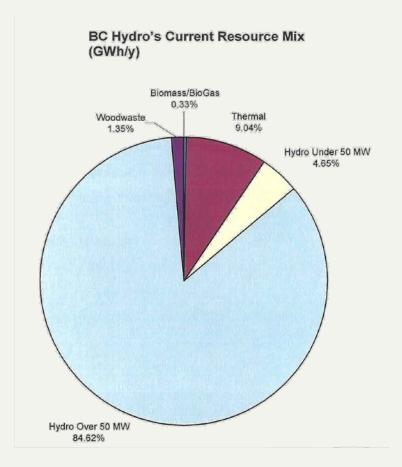
# A little bit of history...



31 publicly owned hydro generation assets

Thermal resources, imports and IPPs

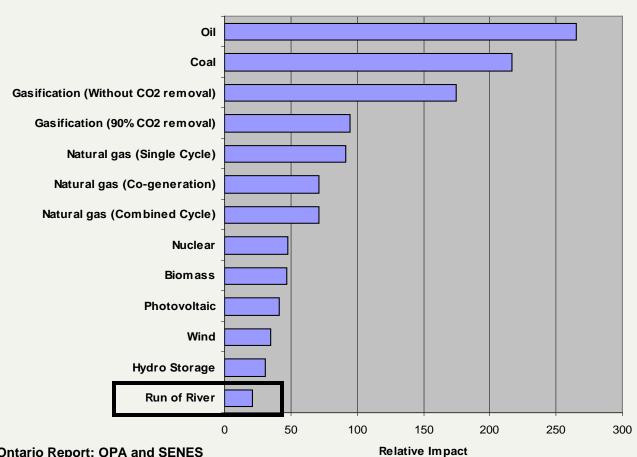
Hydroelectric base keeps rates low as new resources are added



# Why clean/green energy?



#### **Total Impact (Weighted)**



Source: Ontario Report: OPA and SENES

# Renewable Energy Zones



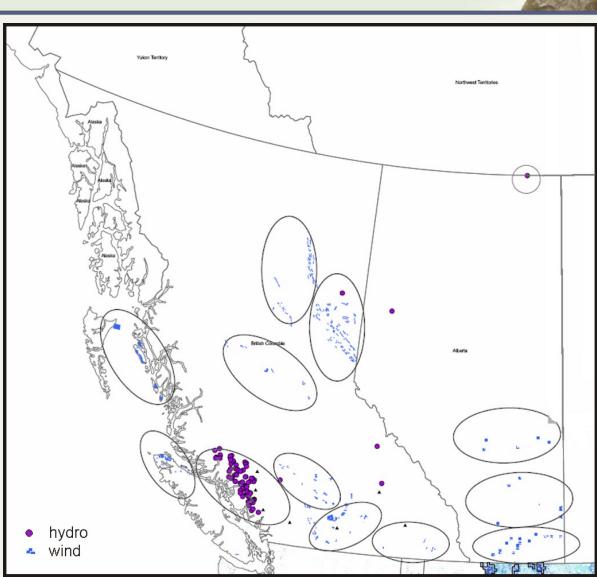
Qualified Resource Areas (QRA's) areas with a high density of developable renewable resources after screening for known technical and environmental limitations.

#### **BC's Potential for Generation**

WIND 34,104 GWh/yr HYDRO 22,372 GWh/yr

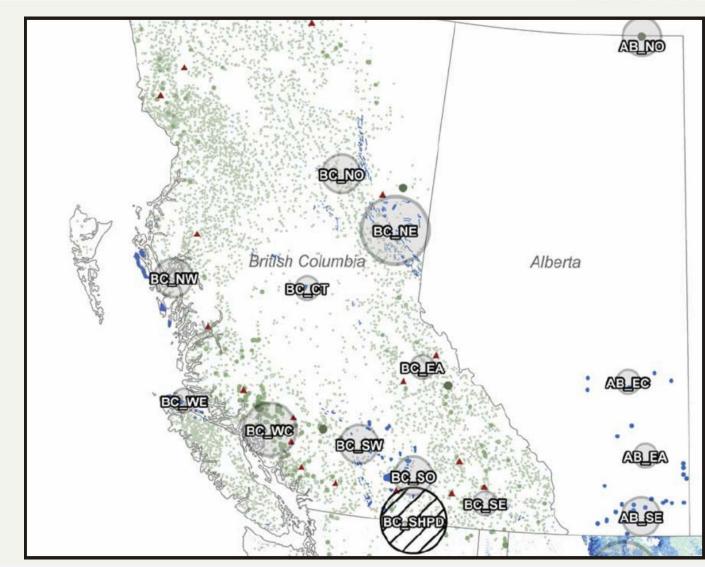
All Renewables 66,010 GWh/yr

Enough to power 6.6 million homes



# Western Renewable Energy Zones



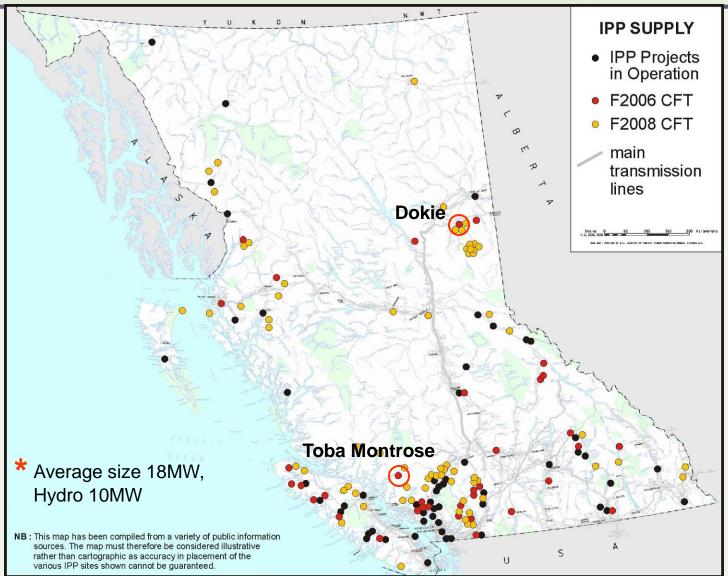


QRA Hub Size Guide
TWh (000s of GWh)/yr

30 - 35
25 - 30
20 - 25
15 - 20
10 - 15
5 - 10
1 - 5

# 47 Operating IPP Projects in BC <sup>^</sup>





Regulations, Approvals and Community Engagement



## **Available Land Resources**

### **First Nations and Community Consultation**

Plutonic engages in early stage, conceptual discussions with respect to a proposed project in order to begin a dialogue, understand the potential opportunities and challenges from a First Nation and community perspective and seeks to build a working relationship.

- Water Act Water License (Ministry of Environment, Water Stewardship Division MOE-WSD)
- Land Act Land Tenure lease and statutory right of way (Ministry of Agriculture and Lands, Integrated Land Management Bureau)
- Preliminary Project Definition in support of both applications



Regulations, Approvals and Community Engagement



## Investigation

### **First Nations and Community Consultation**

In conjunction with First Nations and communities, Plutonic seeks to increase the understanding and awareness of the proposed project through active participation in the investigative process. Investigative work in First Nations traditional territories will typically involve field work opportunities for First Nations members and a commensurate increase in engagement activities.

- Land Act Land Tenure Investigative Use Permit (Ministry of Agriculture and Lands)
- Forest Act Road Use Permit / Agreement (Ministry of Forests and Range)
- Wildlife Act Fish Collection Permit (Ministry of Environment MOE)
- Fisheries Act License authorizing fish collection for scientific purposes (Department of Fisheries & Oceans-DFO)
- Wildlife Act Authorization Permit (MOE)
- Heritage Conservation Act Heritage Inspection and Heritage Investigation Permit (Ministry of Tourism, Culture and the Arts - MCTA)



Regulations, Approvals and Community Engagement



## **Assessment and Approval**

### **First Nations and Community Consultation**

Plutonic works closely with First Nations throughout the assessment and approval process. During this phase, Plutonic will typically seek to complete agreements with First Nations with respect to accommodation for potential impacts of the project.

#### **Provincial Approvals**

- Plutonic works closely with First Nations throughout the assessment and approval process.
   During this phase, Plutonic will typically seek to complete agreements with First Nations with respect to accommodation for potential impacts of the project.
- Forest Act Occupant License to Cut (Ministry of Forests and Range MOFR)
- Forest Act Road Use Permit (MOFR)
- Forest Act Works Permit for Right-of-Way (MOFR)
- Land Act various Crown Land Tenures (Integrated Land Management Bureau ILMB)
  - Road Statutory Right-of-Way
  - Road License of Occupation
  - Powerhouse License of Occupation
- Linear Components License of Occupation
- Intake License of Occupation
- Quarry License of Occupation

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Regulations, Approvals and Community Engagement



## **Assessment and Approval**

#### **Provincial Approvals** (continued)

- Water Act Leave to Commence Construction (MOE-WSD)
- Heritage Conservation Act Heritage or Archeological Site Conservation Permit (MTCA)
- Mineral Tenure Act Mineral Reserve (Ministry of Energy, Mines and Petroleum Resources MEMPR)
- Transportation Act Highway Access Permit (Ministry of Transportation and Infrastructure MTI)
- Transportation Act Works Permit if roads will impact highways (MTI)
- Agricultural Land Commission Act Soil Removal Permit (BC Agricultural Land Commission)
- Environmental Management Act Waste Discharge Permit (MOE)
- Park Act Park Use Permit/Resource Use Permit (Ministry of Water, Land and Air Protection)

#### **Federal Approvals**

- Canadian Environmental Assessment Act Environmental Assessment (Canadian Environmental Assessment Agency-CEAA)
- Fisheries Act Authorization (DFO)
- Navigable Waters Protection Act Approval (Transport Canada TC)
- Indian Act -Approval -(Indian and Northern Affairs Canada INAC)

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Regulations, Approvals and Community Engagement



## **Assessment and Approval**

#### Federal Approvals (continued)

- Species at Risk Act Confirmation of Compliance (Environment Canada EC)
- Aeronautics Act Aeronautical Obstruction Clearance (TC Aerodromes and Air Navigation Branch)
- Environmental Protection Act Disposal at Sea Permit (EC)

#### **Non-Governmental Agreements**

- Third Party Road Use Agreements
- Third Party Private Land Agreements

#### **Other**

Energy Purchase Agreement (EPA) - Contract with BC Hydro



# Plutonic Power's Projects

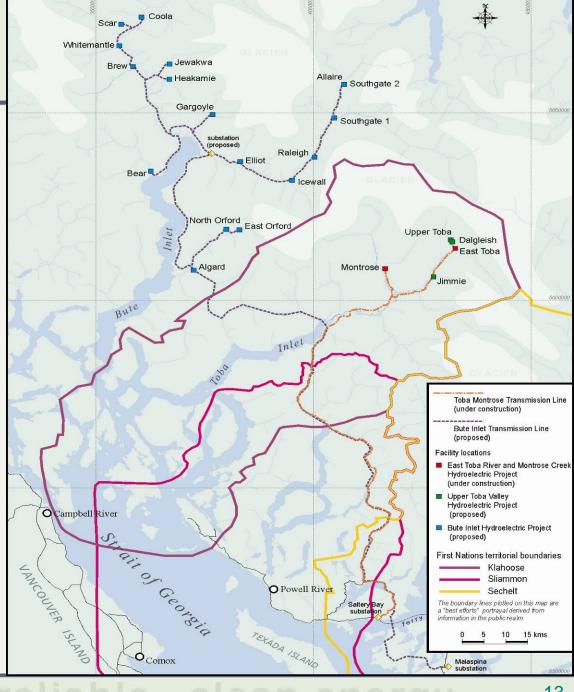
Toba Montrose – 196 MW Upper Toba – 166.3 MW Bute – 1029.8 MW

- Enough energy for over 400,000 homes
- Toba Montrose and Upper Toba have successfully gone through EA process
- Bute is beginning a CEAA panel review process



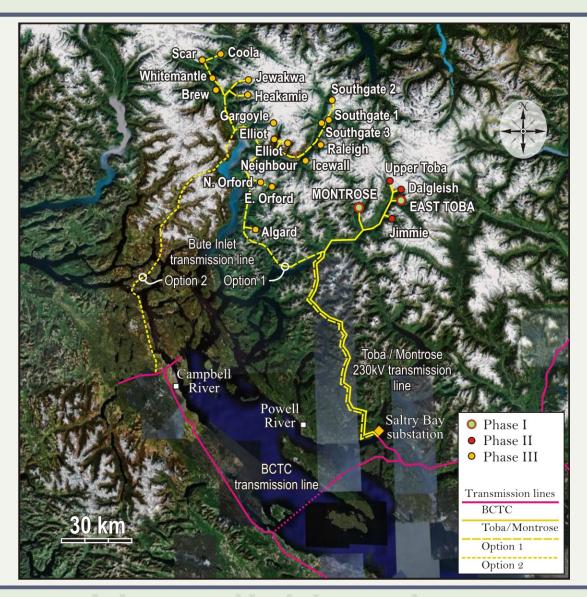






# **Plutonic Power's Projects**





# **Toba Montrose by the Numbers**



## 123 MW East Toba Hydroelectric Facility

- Head = **580 m**
- Design flow = 30 m<sup>3</sup>/s
- Penstock = **5.5** km

## 73 MW Montrose Hydroelectric Facility

- Head = 460 m
- Design flow = 22 m3/s
- Penstock = 4.5 km

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# **Pre-construction Approval Summary**



- 3.5 years of data collection
- Application for Federal EA certificate Jan 06

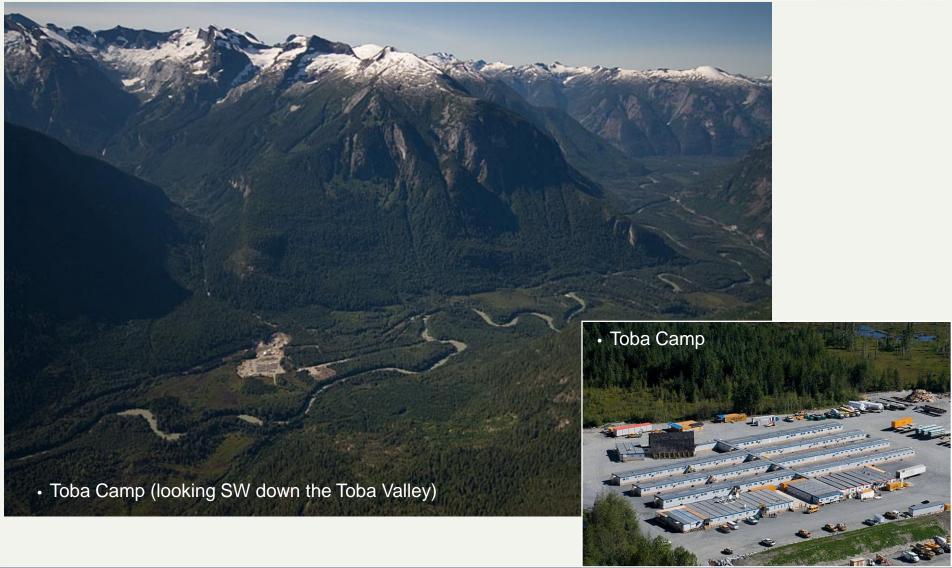
awarded - May 07

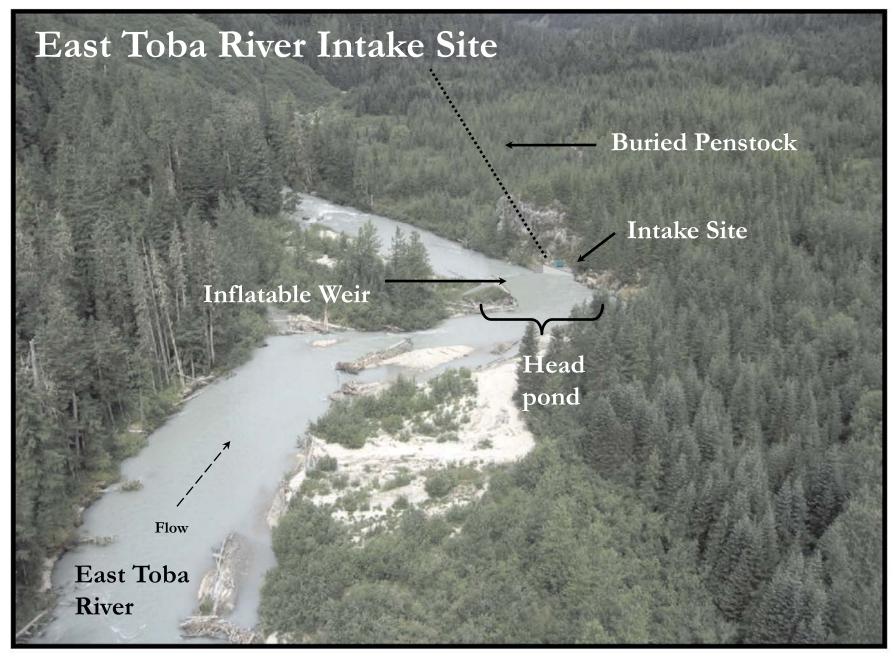
- 52 permits, licenses, authorizations
- 1600 individual permits now in hand

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# **Toba Montrose Project**







Conceptual sketch of the proposed East Toba River intake weir and headpond







Renewable, reliable, clean energy





Renewable, reliable, clean energy





Renewable, reliable, clean energy

# **Provincially Significant**





# **Capacity** ≠ **Footprint**

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|-----|-----|
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| 100 | V.  |

|                    | East Toba River | Rutherford Creek | Ashlu Creek |
|--------------------|-----------------|------------------|-------------|
| Length of penstock | 4.8 km          | 9 km             | 4.4 km      |
| Penstock diameter  | 3 m             | 3 m              | 2.8 m       |
| Head               | 565 m           | 350 m            | 120 m       |
| Generated output   | 123 MW          | 50 MW            | 49.9 MW     |

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