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The Site C Clean Energy Project

**Some informal thoughts
by Guy Dauncey**



Site C

\$7.3 million per MW



Site C

\$7.3 million per MW

\$6.6 billion = 900 MW

@ 58% capacity factor

(BC Hydro LTAP data)

**Capacity x Hours x Capacity Factor
= Gigawatt hours a year**

Site C

900 MW x 365 days x 24 hours x 58%

= 4600 GWh/year

(BC Hydro LTAP data)



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**What else can you buy for
\$6.6 billion?**



Bear Mountain

**Wind energy
\$3 million per MW**



Wind energy
\$3 million per MW
(Clean Power Call rough data)

\$6.6 billion = 2,200 MW
@ 35% capacity factor

**Capacity x Hours x Capacity Factor
= Gigawatt hours a year**

Wind

2200 MW x 365 days x 24 hours x 35%

= 6,800 GWh/year

Site C = 4,600 GWh/year

Wind in the Peace



BC Hydro data:	5,014 MW
Thunder Mountain (Aeolis):	1,400 MW
Hackney Hills (Aeolis):	370 MW



Geothermal energy
\$4 million per MW



Geothermal energy
\$4 million per MW

\$6.6 billion = 1,650 MW
@ 75% capacity factor
(International Geothermal Association data)

**Capacity x Hours x Capacity Factor
= Gigawatt hours a year**

Geothermal

1,650 MW x 365 days x 24 hours x 75%

= 10,800 GWh/year

Site C= 4,600 GWh/year



Efficiency
\$0.7 million per MW



Efficiency

\$0.7 million per MW

(Gary Parke, Evolve Energy data)

\$6.6 billion = 9,400 MW

@ 25% capacity factor

**Capacity x Hours x Capacity Factor
= Gigawatt hours a year**

Efficiency

9,400 MW x 365 days x 24 hours x 25%

= 20,586 GWh/year

Site C= 4,600 GWh/year

	GWh/year
Efficiency	20,586
Geothermal	10,800
Wind	6,800
Site C	4,600

**Except for Site C, these are all
“back of envelope” numbers
that need rigorous analysis.**

Uncertainties:

- **Dispatchability and shaping costs of wind versus Site C**
- **Final cost of Site C in 2020**
- **Grid expansion costs for 2,200 MW wind**
- **Scope for 20,000 GWh of efficiency on top of BC Hydro's already planned 10,900 GWh by 2020**
- **Scope for 1,650 MW of geothermal in BC**

Uncertainties = need for greater review

Questions:

- **How would a wider analysis compare these options?**
 - **Cost per unit of energy**
 - **Environmental impacts**
 - **Physical land impact**
 - **First Nations views**
 - **Socio-economic impact**
- **Is this analysis best made by cabinet, or by the BC Utilities Commission?**



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Thankyou!