NATIONAL POWER PLANNING IN NEPAL
A Naïve Foreign Investor's Perspective

NEPAL POWER INVESTMENT SUMMIT
2018 January 27-30
Kathmandu

DRAGON CAPITAL

Macro Supply & Demand Economy

- Installed capacity is ~960 MW by end of 2017
- Total current demand for power at its peak ~1475 MW (excluding current estimated suppressed demand of 3,000 MW)
- Imported power of 300-370 MW from India

Future Power Demand Growth

Domestic

- Replacement of household and small business diesel generators
- Value-added and light industry fueled by trade between world's largest consumer markets
- Development and modernization of tourism industry (in particular luxury nature/expedition tourism)

Foreign

- Export to India and China

2017 Hydropower Policies

Most Substantive PPA Polices in the Last 25 Years

- Creation of NERC
  - Standards for generation and transmission and distribution
  - Determination of PPA off-take and consumer off-take tariffs
  - Promote smooth supply of power and supply/demand balance
- Move toward standardization of PPAs
  - Run of River
  - Peaking Pondage
  - Reservoir
- Revision of PPA tariffs to include cost recovery escalation and promote construction of plants that contribute to the stabilization of the National grid (plus new RoR design restrictions) – But is it enough to effectively manage the grid load?
- Possibility of USD indexed tariffs to support off-shore financing of reservoir projects >100 MW
- Lifting of financial penalty related to minimum generation requirement for < 10 MW run-of-river projects

Advent of a More Politically Stale Era for National Politics……. Let's Hope

2006: Comprehensive Peace Agreement
2008: 601 member Constituent Assembly and 1st President elected and PM Prachanda forms coalition government
2009: PM Prachanda resigns and PM Kumar forms new coalition government
2010: PM Kumar resigns, but acts as caretaker
2011: PM Khanal is elected and then resigns after Constituent Assembly misses deadline. PM Bhattari is elected
2012: Constituent Assembly is dissolved
2013: New Constituent Assembly elected and PM Regime appointed.
2014: PM Koirala elected
2015: Constitution is passed and PM Oli is elected.
2016: PM Oli resigns and PM Dahal (Prachanda) returns
2017: PM Deuba replaces PM Dahal
2018: Return of PM Oli

If Folks Struggle with National Politics…..

- Local Self-Governance Act of 1999
  - 7 States
  - 77 Districts (each with Development Committees)
  - 744 Local Governments (each with development Committees)
    - + 4 Metropolis
    - + 13 Sub-Metropolis
    - + 246 Municipalities
    - +481 Villages
- 8 languages
- 18 significant (>1% of population) ethnic groups
- 7 religions
- MOE (DoED), NERC, WEC, EPC, NEA

Witnessed Obstruction to Hydropower Development

- Maneuvering through the “Great PPA Trade” and “Field of Dreams”
- Outdated/unreliable Feasibility Studies and Data (lack of flow data on minor tributaries)
- Complexity of building high-head hydropower facilities
- Lack of access and/or evacuation infrastructure (including land access and RoW)
- Limited access to local bank debt
  - Smaller Projects: Name lending by local banks due to failure to enact qualified EPC performance structure
  - Larger Projects: Lending capacity, tenor and cost
- Effects of miss-planning
  - Delay in signing PPAs due to surplus energy in wet season
  - Indeterminate off-take (curtails) under Take or Pay PPAs (Take and Pay?)
- Managing the myriad of political and bureaucratic relationships

Obstacles Most Effectively Handled at National Level

- National Planning Commission: Geographical generation and support infrastructure planning as part of Nepal's overall socio-economic development plan:
  - Industry: Special Economic Zones
  - Mining: Resource Rich Zones
  - Tourism: Conservation Zones
  - Services: Residential Zones
  - Export: Power Export Zones

  Where does Nepal need power , how much power and what type of power?

- Allocation of PPAs to create load stability – Present lack of base load plants affects NEA's load management ability and National grid reliability (reservoir plants ~10% of current hydropower capacity).
  - Larger reservoir plants are, in general, FDI dependent due to size and access to reasonable cost bank debt (new PPA accommodates indexation for bank debt)
  - Minimum local ownership to ensure exchange of knowledge and acculturation

Obstacles Most Effectively Handled at National Level

- "Shovel Ready" return to National Pride Projects, but this time assets in advance of bid and responsibility of a single commission - detailed Feasibility Study, land and ROW secured; road and existing sub-station access; draft licensing/permitting, BOI, Rastra Bank, Visa and PPA documents finalized for execution and submission

- Competitive bidding process with NPC, DoED, NERC and NEA (controlled grid infrastructure) commission determining bid technical and financial criteria and providing all "Shovel Ready" assets and process support

- Generation type and placement should not be haphazard, but intentionally planned to meet and stabilize load centers adhering to National development plan

Should the Role of NEA Change?

- Historical role of NEA outdated? (Not alone….ie. EGAT, EVN…)
- Generation + Transmission/Distribution = Conflict of Interest
- Monopoly control over Nepal's National grid ensures power security and permits NEA focus on load management and transmission and distribution infrastructure
- All imported power and exported power should be sold to NEA
  - Domestic load management
  - Right to manage cross-border power sales to the financial benefit of Nepal
  - Right to determine who provides power to Nepal if necessary (Import power from Nepali-owned plants in India?)
- Domestic tariffs, when taken as a whole, refined to be commercially viable based on present usage pattern

NEA Priorities

- Revision of electricity tariffs with NERC. NERC assistance in moving toward NEA financial sustainability
- Load management via PPA allocation
  - Active engagement to promote type of power generation that meets load center requirements and is stable
  - International power sales and purchases
- Strengthening of existing National grid and expansion aligned with Nepal socio-economic development plan
  - 220 kV East to West corridor
  - 400 kV Butwal-Gorakhpur transmission line
  - 500 kV Rasuwagadhi-Kyirong transmission line

Voltage	Existing	Under Construction	Planned and Proposed
	Transmission Line Length in Circuit km		
66kV	511.2	-	-
132kV	2416.7	775.0	1400.0
220kV	-	1049.0	570.0
400kV	-	740.0	1560.0

Source: NEA; 2016

Thank You !!

- For your attention….
- For your patience…..
- For your understanding….
- For your restraint….