COLORADO'S RENEWABLE ENERGY DEVELOPMENT TEAM (REDT)

Streamlining Small Hydro Power Permitting: An Infrastructure and Economic Opportunity

Presented at the 2012 ASERTTI/NASEO State Energy Policy and Technology Outlook Conference

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ARRA Funds administered through the DOE State Energy Office Program enabled the Colorado Governor's Energy Office to fund

Renewable Energy Development Team (REDT)

Technical & Business Development Assistance (TBDA)	FERC Streamlined Permitting Program

The Hydropower Opportunity

Over 80,000 Dams in the U.S.

Only 3% produce hydropower electricity

Converting only a small portion of non-powered dams could generate >10,000 MW

Huge opportunity for renewable energy development

The Hydropower Opportunity

Thousands of miles of existing irrigation ditches, pipelines and water delivery systems

Development of targeted small and low impact projects in key states could open up additional development

Huge opportunity for renewable energy development

Hydropower Market Barriers

Cumbersome FERC Permitting Process

- Targeted toward large-scale development
- Convoluted resource agency review phase
- Time and cost can kill project economics

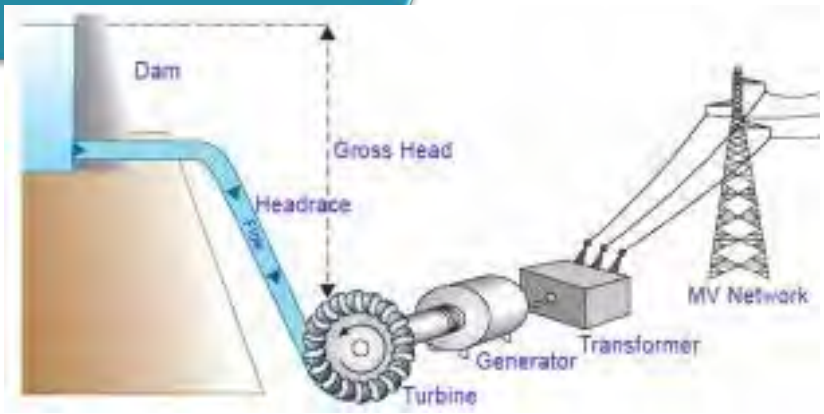
Solution → FERC Streamlined Permitting Program

- MOU between State of Colorado and FERC
- Low-impact program criteria
- Enabled faster resource agency review
- Team assembled to facilitate and assist the permitting process

Streamlined Permitting Criteria

FERC Streamlined Permitting Program

- Existing infrastructure
- No increased stream diversions
- Water, rights, permits, licenses, etc.
- No adverse effects unless easily mitigated (water, fish, cultural, historical)
- Must qualify for FERC conduit exemption or 5 MW exemption



FERC Pilot Benefits to Applicant

- Resource agency coordination – trims pre-application review from years to months
- Identify project barriers → Propose solutions
- Uses streamlined FERC review - trims FERC review time from years to months
- Access to subject matter experts

CO Pilot Program Process

- **Prescreen Application and Review**
  - Does project meet program criteria?
- **Full Application**
  - Detailed submission of project information and documents
- **Review**
  - Subject matter expert review and feedback
- **Resource Agency Review**
  - Coordinated submission to resource agencies and stakeholders
- **FERC Application Submission**
  - Submission of complete application

PROJECT TIME SAVINGS

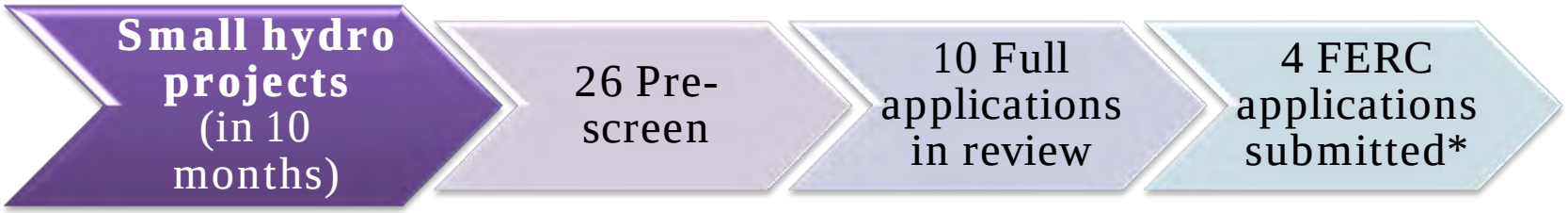
Saves 1-2 years

Colorado Resource Agency Partners

REDT Facilitates Streamlined Permitting Process

FERC Final Review

Saves another 1-2 years



* +4 more applications to be submitted by end of February 2012

Example: Low-impact hydropower FERC project

Ranch in Meeker, Colorado
23 kW
Project Savings: $350,000 over 30 years

Utilizes water used for irrigation to produce power to offset the ranch's load. REDT trimmed FERC and pre-FERC application review from 2-3 years down to months

Small hydro powers a ranch in rural Colorado

Small hydropower trend: existing dams and facilities are now being retrofitted with small hydro systems, opening the door to new hydro development.

Program Success

Catamount Dam, Colorado
695 kW (in process)
Project Savings: >$250,000, plus 3-4 years

Provided assistance to first-time developer on a community project.

Project is seeking a 5 MW exemption.

Estimate ~ 2.9 MM KWh annual production

Colorado Program Results

26 Project Applications	• Projects represent ~ 5 MW
Received 2nd & 3rd Fastest FERC Exemptions	• One point of contact created efficiencies • Estimate fastest is yet to come
Hydropower Industry Taking Notice	• Industry is targeting the state and requesting extension of program
Economic Development	• Hydrovision 2013 will bring 4,000+ to Denver • Program success is attracting additional hydro investment in the state, benefits rural areas
FERC Support	• FERC is requesting an extension of MOU in Colorado • Is supportive of expansion to other states

Colorado Program Testimonials

Colorado Small Hydro Streamlined Permitting Program Video

Shortcut to Wenschhoff_Profile-Short.mov.lnk

Colorado Program Testimonials

"..the economic development benefits of these projects stay in the state creating jobs for Coloradoans and go to rural communities where it's needed the most."

Colorado Program Testimonials

"I am extremely pleased by FERC's announcement yesterday that it has granted the first hydropower approval under its memorandum of understanding with the state of Colorado. Under this pilot process, projects that once took as long as three years to approve could be approved in as little as two months. The success demonstrated so far could serve as a model for the entire country. It is wonderful to see the results of a cooperative effort on the part of industry, federal and state governments, and local stakeholders. By streamlining the licensing process for certain smaller projects, we can tap 1.4 million new jobs and more quickly put Americans back to work building the lowest cost electricity generation resource in the country."

Linda Church Ciocci
Executive Director of the National Hydropower Association

"Small hydro is a renewable resource that has tremendous potential. FERC and Colorado have shown their commitment to moving these projects forward knowing that, ultimately, it will benefit consumers and help create jobs. It's a win-win for everyone."

Jon Wellinghoff
FERC Chairman

Colorado Program Success

GEO's Investment Produced:

- >$ 11 million in private industry investment
- 8 projects will be built
- 1.6 MW installed capacity
- 10 million annual kWhs produced
- 500 million kWhs over 50 years

Coordination

- One-stop shop for projects and their FERC permits
- Education of resource agencies on their consultation duties
- Direct FERC access for faster review turnarounds

National Attention

- Mention in Renewable Energy World, HydroWorld, Denver Post
- Letters of support from HNA, FERC and American Rivers
- Presentations at World Renewable Energy Forum, NHA conference, Hydrovision

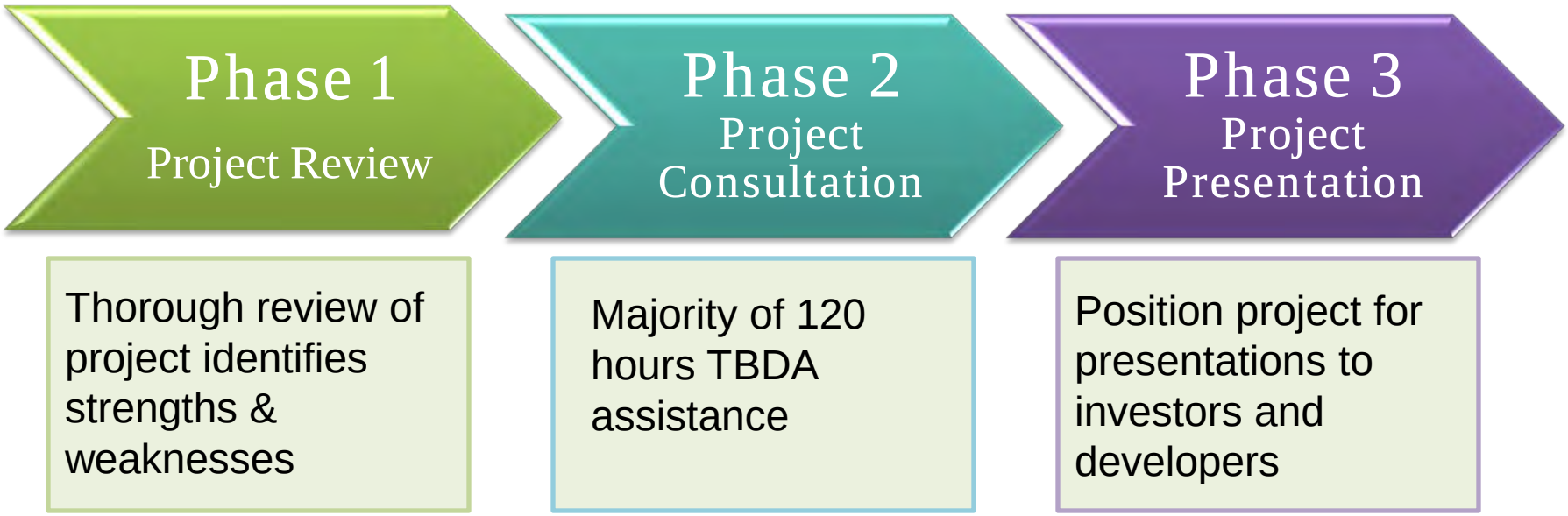
Technical & Business Development Assistance (TBDA)

UNDER 30 MW:

Biomass
Small hydro (<10 MW)
Solar PV and Solar thermal
Distributed generation wind
Geothermal




Stage Gate Process for TBDA



- **50% of projects pass through each stage**

TBDA Benefits to Applicant

- Free service, up to 120 hours of technical assistance
- Simple online application process
- Subject matter expertise, one point of contact
- Established, automated process
- Potential financing
- Governor's Energy Office credibility

Example: Community Solar

Antinito
500 kW

Helps a depressed economy
and agriculture

Trend: Community Renewables are becoming more popular. Nothing is stopping investor owned utilities from moving forward with community solar in 2011.

Benefits of these installations include: placement in an ideal location and no wheeling charges

Example: Anaerobic Digester

Greeley
2,000 kW

Potential partnership between wastewater treatment facility, Leprino Dairy and a JBS Swift, a cattle company

Trend: Anaerobic digesters are low-hanging fruit in Colorado. Anywhere methane is currently being flared energy can be captured to help reduce the facility's peak energy load. The primary driver in agriculture will be odor reduction to avoid nuisance lawsuits and support expansion with revenue coming from gas sales.

Benefits: odor and environmental impact reduction; energy independence; meeting new regulatory guidelines and GHG emissions reductions

REDT PROGRAM OVERVIEW

1/31/2012

	PDF Requests	Pre-Screen Applications	Pre-Screen "Go"	"Notice of Approval"	Full Applications	Full Review "Go"	Resource Agency "Go"	FERC "Go"
FERC	62	26	21	19	10	9	4	4
(not a yes)			4	5			1	
kW		5,155	4,700	3,090	1,726	1,651	538	

	PDF Requests	Full Applications	Admin Review "Go"	Phase 1 "Go"	Phase 2 "Go"	Phase 3 "Go"	Funded
TBDA	69	41	40	22	3	2	
(not a yes)			1	14	2		
kW		84,679	84,676	61,750	21,523	21,500	

TOTAL	131	67	61	41	13	11	4	4
(not a yes)			5	19	2		1	
kW		89,834	89,376	64,840	23,249	23,151	538	

Technology	PDFs	TBDA	
		Phase 1	Phase 2
Biomass	19	6	4
kW		29,630	13,630
DG Wind	9	4	2
kW		23,503	21,500
Geothermal	7	5	3
kW		21,722	21,722
Small Hydro	75	9	5
kW		1,574	1,368
Solar Electric	14	17	7
kW		8,250	3,500
Solar Thermal	7		
kW			
	131	84,679	61,720

FERC	
Pre-screen	Full
26	10
5,155	2,016

Questions?

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