



FREE FLOW POWER



New Hydropower on Existing Dams: Making Beneficial Use of Existing Infrastructure



June 4, 2014



Overview of Free Flow Power

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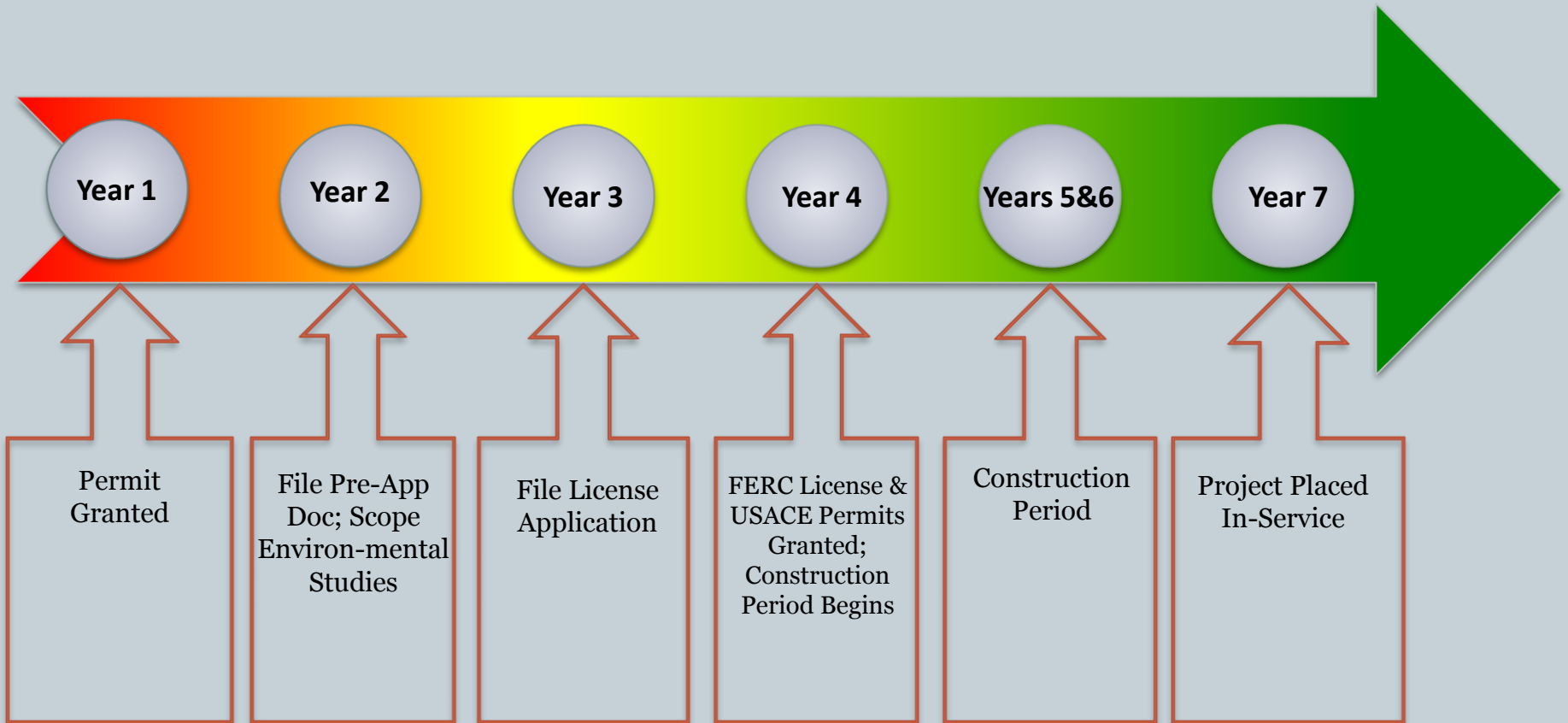


- Free Flow Power is developing the nations largest portfolio of hydroelectric projects
 - The portfolio includes 21 “Advanced Projects” totaling 208 MW
 - 10 of these projects (totaling 145 MW) are located on the Allegheny/Ohio/Monongahela Rivers
 - Two of the Monongahela Projects are in WV (Opekiska and Morgantown)
- FFP has 15 professionals, most with 15-30 years experience
- Development of new hydropower on existing dams is FFPs core business

FFP's Advanced Portfolio



Hydropower Development Timeline



FFP Development Strategy



Inputs (Design)

Traditional, low-impact design approach

Low-profile powerhouse design for minimal visual impact

High efficiency turbines maintain efficiency over broad range of flow and head

Outputs (Benefits)

Local job creation

Low-cost, clean, local source of renewable energy

Maximize the beneficial use of existing public infrastructure with few new impacts



Regional Hydropower Opportunity

Regional Hydropower Opportunity



West Virginia is uniquely positioned to participate in the next generation of hydropower development. This status will ensure that low cost, locally sourced hydropower energy will be contributing to the regional energy mix for generations.

Why West Virginia?

- Available natural resources
 - Strong Water Resource
 - Available drop in water surface elevations
- Existing navigational locks and dams
- Surrounding infrastructure
 - Developed transmission grid
- Precedent hydropower installations

Opekiska Lock & Dam



Total Capacity

- 6.0 MW

Est. Annual Generation

- 23.7 GWh

Proposed Turbines

- 2 Bulb Pit Kaplan Turbines

FERC Project No.

- P-13753



Morgantown Lock & Dam



Total Capacity

- 5.0 MW

Est. Annual Generation

- 19.7 GWh

Proposed Turbines

- 2 Bulb Pit Kaplan Turbines

FERC Project No.

- P-13762



Feasibility Study Considerations



Over the last 18 months, FFP has spent over \$4 million conducting environmental and engineering studies to assess the feasibility of installing hydropower on its Monongahela projects

Water Quality Monitoring/Modeling

Project Hydraulics Study

Terrestrial Habitat and RTE Species Study

Aquatic Habitat Assessment

Wetland Delineation Study

Sediment Quality Survey

Archaeological & Historic Resources Study

Mussel Survey

Recreation Resources Management Plan

Fish Entrainment and Passage Study

Hydropower's Contribution to the Region



These projects will involve over \$30 million of capital expenditures

- FFP prefer to source labor and materials as local as possible
- Construction phase will involve 50-60 new jobs
- Asset life in excess of 50+ years

Local job creation

Low-cost, clean, long term
local source of renewable
energy

Maximize the beneficial use of
existing public infrastructure with
few new impacts



Thank You