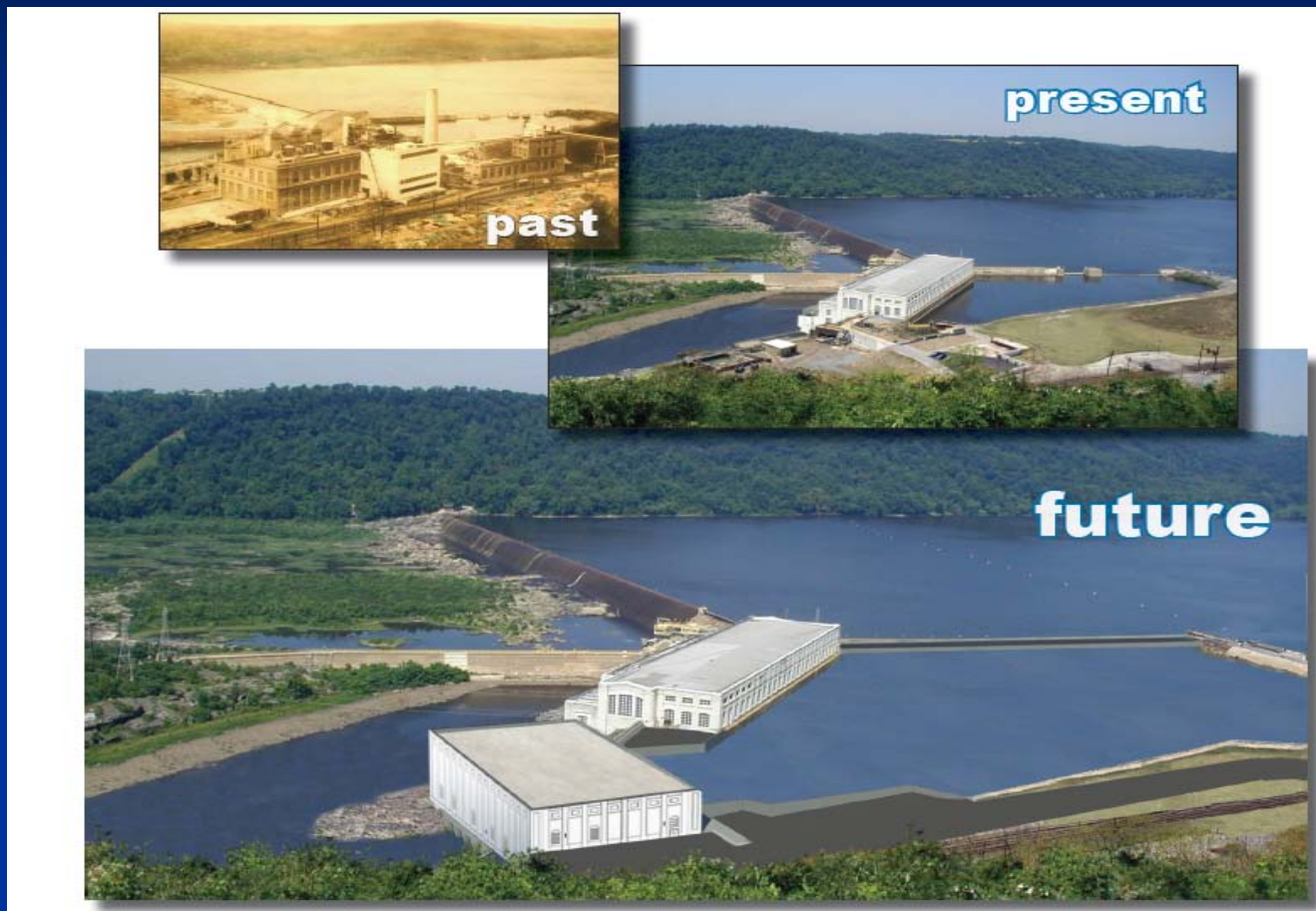


# Holtwood Expansion Project



N. Christian Porse, P.E., MBA  
Plant Manager  
PPL Holtwood LLC

# Holtwood Expansion Project

## Key Drivers



- Fish Passage Improvement
- Increase renewable energy capacity by 125 MW
- Pennsylvania Renewable Portfolio Standard
- License amendment to 2030

# Holtwood Expansion Project

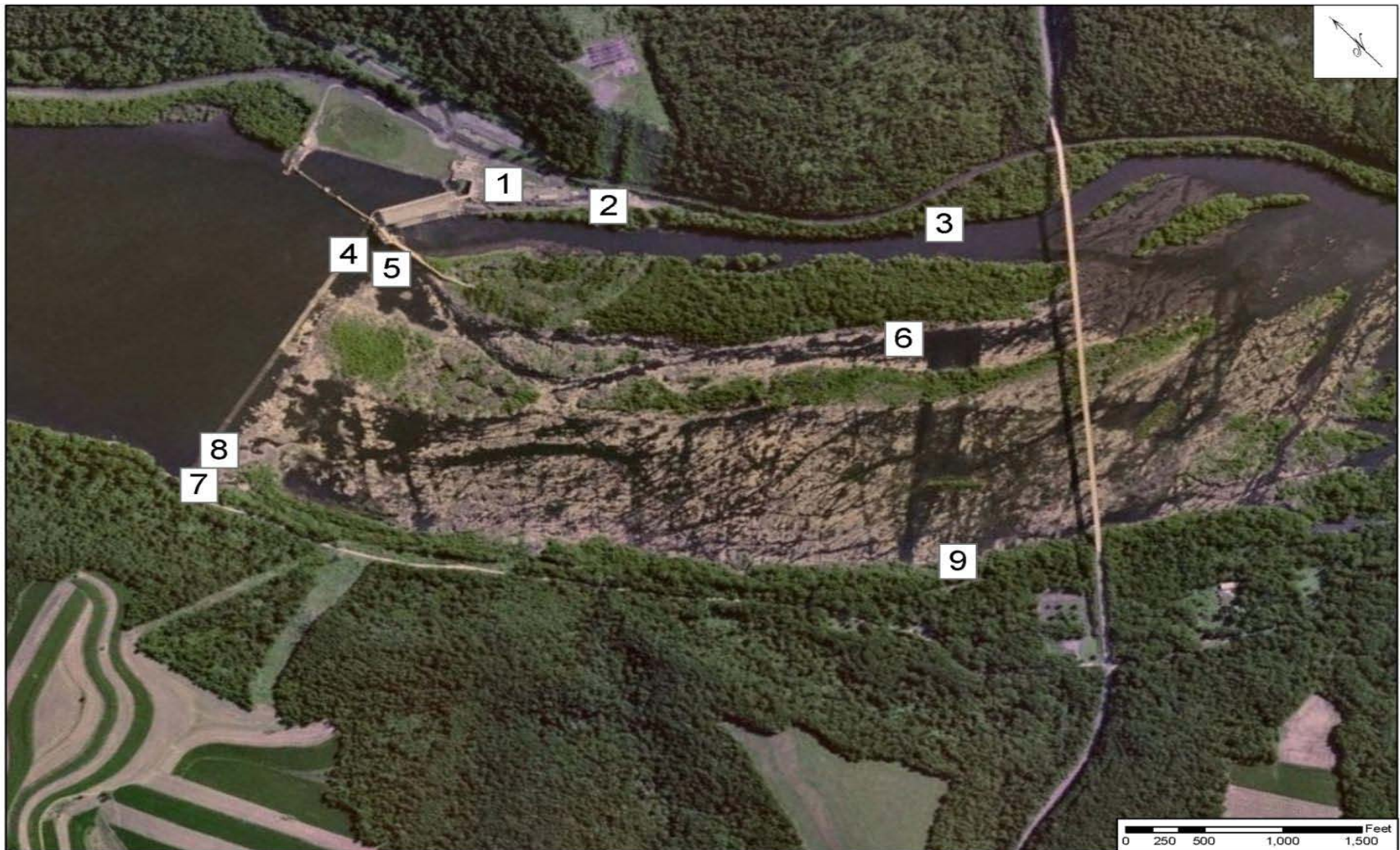
## Project Timeline



- Initial development work started in July 2004
- Initiated resource agency discussions in February 2005
- Issued design contract in February 2006
- License amendment and Section 401 applications submitted in December 2007
- Solicited and awarded major equipment contracts in early 2008
- Project cancelled in December 2008
- Project restarted in April 2009 as a result of ARRA
- License Amendment issued November 2009
- Construction started in January 2010
- In-service 1<sup>st</sup> Quarter 2013



# Holtwood Expansion Project Potential Sites





# Holtwood Expansion Project Final Configuration



# Holtwood Expansion Project

## Project Scope

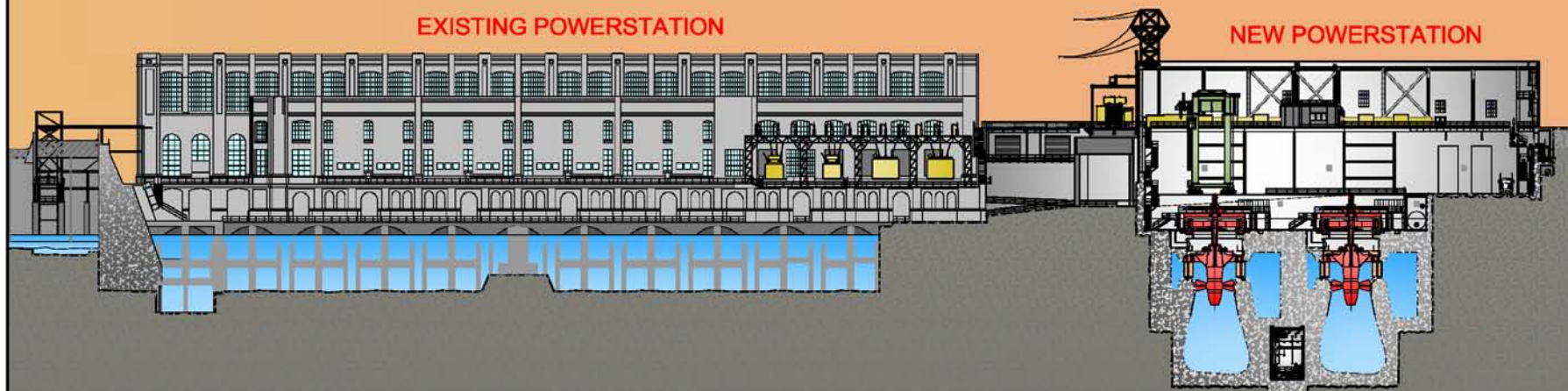


- New power station with (2) 60 MW hydro turbine generators
- (2) 1.25 MW hydro turbine generators in existing powerhouse
- Unit 1 draft tube extension
- Replace existing 625' Skimmer Wall
- Install 745' of pneumatic flash boards on existing dam
- Expand forebay, excavate tailrace and Piney Channel
  - Create optimum flow velocities for shad passage (4–7 fps)
- New bridge over railroad and public fishing access to tailrace
- License-required recreational enhancements & environmental mitigations
- Improvements to the existing fish-lift



# PPL HOLTWOOD, LLC

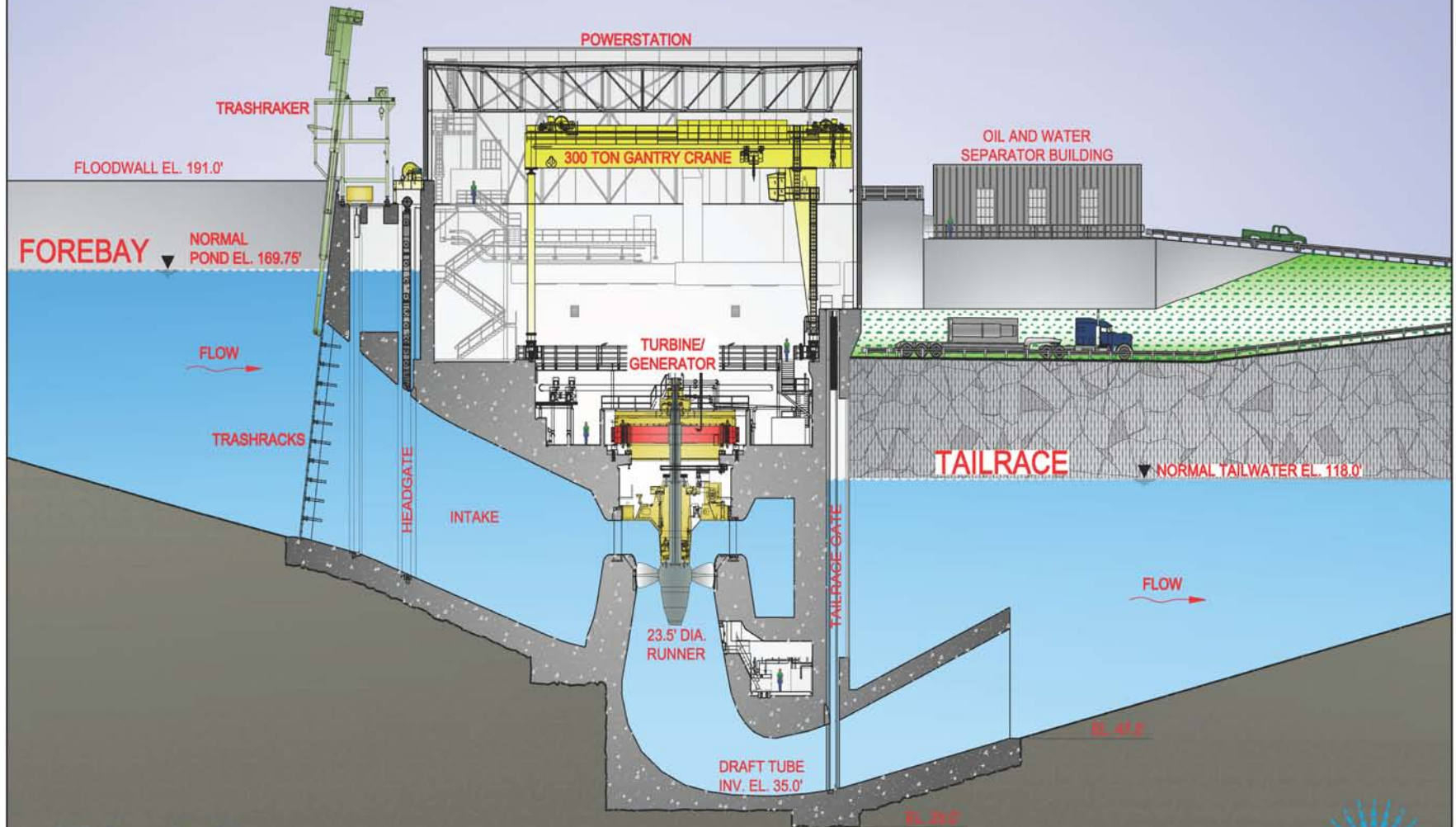
## HOLTWOOD REDEVELOPMENT PROJECT



NEW UPSTREAM VIEW

# PPL HOLTWOOD, LLC

## HOLTWOOD REDEVELOPMENT PROJECT





# Holtwood Expansion Project Environment & Recreation



- Fish Passage Improvement
- Bald Eagle Management Plan
- Threatened & Endangered Species
- Wetland Mitigation Projects
- Whitewater Enhancements
- Boat Launch Improvements
- Enhanced Public Fishing Area

# Holtwood Expansion Project Environmental Considerations







# PPL HOLTWOOD, LLC

## HOLTWOOD REDEVELOPMENT PROJECT

### PROPOSED SITE PLAN RENDERING

EXISTING SITE PLAN

NEW BRIDGE

NEW SKIMMERWALL

EXISTING POWERSTATION

NEW POWERSTATION

NEW  
PUBLIC TAILRACE  
FISHING AREA



# Holtwood Expansion Project

## Project Economics



- Initial estimate - \$250 million
- Cost revised to \$434 million
- Project cancelled in December 2008
  - Energy pricing projections
  - Capital market liquidity
- American Reinvestment and Recovery Act passed
  - Pursuing ITC's and Loan Guarantees
- Project restarted in April 2009
- DOE Part 1 applications initially submitted September 2009
- License Amendment issued November 2009
- DOE Part 2 applications submitted in December 2009
- Construction started in January 2010

# Holtwood Expansion Project Site as of November 2009





# Holtwood Expansion Project Site as of April 2010





# Holtwood Expansion Project Upstream Cofferdam – April 2010





# Holtwood Expansion Project Rock Processing – April 2010





# Holtwood Expansion Project New Tailrace Area – April 2010

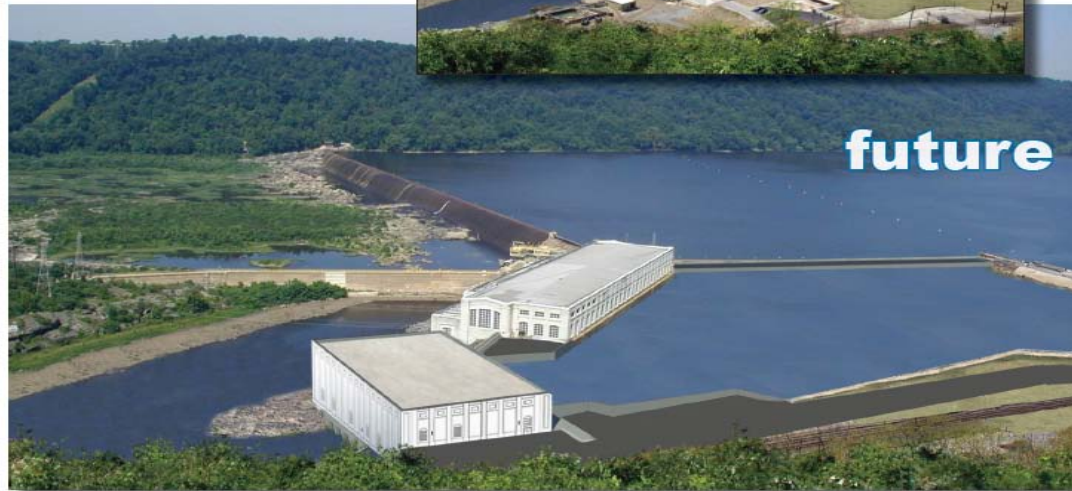
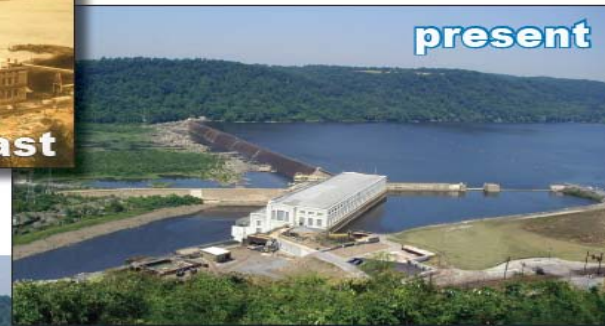




# Holtwood Expansion Project New Tailrace Area – April 2010



# Holtwood Hydroelectric Project Celebration of the Past Building for the Future



Thank you!