



## **2020 Cost Estimate and Financing Plan**

### **Yakima River Basin Integrated Water Resource Management Plan**

By

Office of Columbia River  
Washington State Department of Ecology  
Central Regional Office  
Union Gap, WA

and

Debt Management Division  
Office of the State Treasurer  
Olympia, WA

March 2021, Publication 20-12-002



## Publication Information

This document is available on the Department of Ecology's website at<sup>1</sup>: [2020 Cost Estimate and Financing Plan \(wa.gov\)](#)

Cover photo credit

- Richard Visser (US Bureau of Reclamation), 2019-2020: Cle Elum fish passage intake ramp construction work.

## Contact Information

**Office of Columbia River**  
Central Regional Office  
1250 West Alder Street  
Union Gap, WA 98903-0009  
Phone: 509-575-2490

**Website<sup>2</sup>:** [Washington State Department of Ecology](#)

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# Department of Ecology's Regional Offices

## Map of Counties Served



<b>Southwest Region</b> 360-407-6300	<b>Northwest Region</b> 425-649-7000	<b>Central Region</b> 509-575-2490	<b>Eastern Region</b> 509-329-3400
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Region	Counties Served	Mailing Address	Phone
<b>Southwest</b>	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
<b>Northwest</b>	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	3190 160th Ave SE Bellevue, WA 98008	425-649-7000
<b>Central</b>	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
<b>Eastern</b>	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
<b>Headquarters</b>	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

# 2020 Cost Estimate and Financing Plan

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Olympia, WA

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March 5, 2021

The Honorable Jay Inslee, Governor  
Honorable Members of the Washington State Legislature  
Olympia, Washington

**RE: 2020 Cost Estimate & Financing Plan for the Yakima River Basin Integrated Water Resource Management Plan**

The Department of Ecology (Ecology) and the Office of the State Treasurer (Treasurer) respectfully submit this *2020 Cost Estimate & Financing Plan for the Yakima River Basin Integrated Water Resource Management Plan*, the fourth in the series as required under RCW 90.38.120.

This 2020 Yakima Basin Integrated Water Resource Management Plan Cost Estimate and Financing report, compiled by Ecology's Office of Columbia River and co-authored by the Treasurer's Debt Management Division, is submitted to the legislature in compliance with RCW 90.38.120. This report builds on previous reports and provides current cost estimates to implement the Initial Development Phase (2013-2029) as well as the full buildout cost (35-years) of implementing the Integrated Plan.

For this report submittal, Office of Columbia River contracted with Western Washington University for the analysis of Financing Strategies and creation of a customized funding model that allows for consideration of different funding scenarios for the future financing of the Integrated Plan.

This report is now available at this website:

<https://apps.ecology.wa.gov/publications/SummaryPages/2012002.html>

If you have any questions regarding this report, or would like more information, please contact me by phone at (509) 952-5080 or by email at: [thomas.tebb@ecy.wa.gov](mailto:thomas.tebb@ecy.wa.gov). If you would like hard copies of the report, contact Colleen Smith by phone at (509) 571-0921 or email at: [colleen.smith@ecy.wa.gov](mailto:colleen.smith@ecy.wa.gov).

Sincerely,

  
G. Thomas Tebb, L.Hg., L.E.G.  
Director  
Office of Columbia River

  
Jason Richter  
Deputy Treasurer, Debt Management  
Office of the State Treasurer

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## Statutory Directive RCW 90.38.120

Legislative intent - Cost to implement the integrated plan.

- (1)
  - (a) It is the intent of the legislature for the state to pay its fair share of the cost to implement the integrated plan. At least one-half of the total costs to finance the implementation of the integrated plan must be funded through federal, private, and other nonstate sources, including a significant contribution of funding from local project beneficiaries. This section applies to the total costs of the integrated plan and not to individual projects within the plan.
  - (b) The state's continuing support for the integrated plan shall be formally reevaluated independently by the governor and the legislature if, after December 31, 2021, and periodically thereafter, the actual funding provided through nonstate sources is less than one-half of all costs and if funding from local project beneficiaries does not comprise a significant portion of the nonstate sources.
- (2) The department shall deliver, consistent with the intent of this section, a cost estimate and financing plan that addresses the total estimated cost to implement the integrated plan and analyzes various financing options. The cost estimate and financing plan must include a description of state expenditures as of September 28, 2013, incurred implementing the integrated plan and proposed state expenditures in the 2015-2017 biennium and beyond with proposed financing sources for each project.
- (3) In addition, the office of the state treasurer shall prepare supplementary chapters to the cost estimate and financing plan for the department that:
  - (a) Identifies and evaluates potential new state financing sources to pay for the state's contribution towards the overall costs of the Yakima integrated plan's implementation;
  - (b) Identifies and evaluates potential new local financing sources to pay for a significant local contribution towards the overall costs of the Yakima integrated plan's implementation;
  - (c) Considers the viability, and evaluates the advantages and disadvantages of various financing mechanisms such as revenue bonds, general obligation bonds, and other financing models;
  - (d) Identifies past, current, and anticipated future costs that will be, or are anticipated to be, paid by nonstate sources such as federal sources, private sources, and local sources; and
  - (e) Considers how cost overruns of projects associated with the integrated plan could affect long-term financing of the overall integrated plan and provides options for how cost overruns can be addressed.
- (4) The department may, in the sole discretion of the department, contract with state universities or private consultants for any part of the cost estimate and financing plan required under this section.
- (5) The initial cost estimate and financing plan required by this section must be provided to the governor and the legislature, consistent with RCW [43.01.036](#), by no later than December 15, 2014, for consideration in preparing the 2015-2017 biennial budget and future budgets. The cost estimate and financing plan must be updated by September 1st of each successive even-numbered year.

[ [2013 2nd sp.s. c 11 § 11.](#)]

# Office of Columbia River

## Vision

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*Preserve and enhance the standard of living for the people of Washington by strengthening the state's economy, and restoring and protecting the Columbia Basin's unique natural environment.*

## Mission

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*Aggressively pursue development of water supplies to benefit both instream and out-of-stream water uses*



**View of Clear Lake from Clear Creek Falls**

Photo credit: Tim Poppleton (OCR), 2020

# Executive Summary

Over the last seven years lasting partnerships were forged, reliable water supplies secured, and once dry creek beds rehydrated under the auspices of the Yakima Basin Integrated Water Resource Management Plan (Integrated Plan). The Integrated Plan is the third phase of the federal Yakima River Basin Water Enhancement Project (Figure 1 on page 3) and is now a model for integrating complex water management strategies into a single cohesive plan receiving international attention.

The year 2020 marks great advancement in expanding water solutions through continued implementation of the Integrated Plan. Integrated Plan members are enthusiastic about the projects' accomplishments, including continued fish passage construction and shoreline stabilization progress at U.S. Bureau of Reclamation's Cle Elum reservoir. Additionally, Integrated Plan members are excited to see the success of multiple water conservation efforts. These efforts have achieved approximately 34,951 acre-feet (ac-ft.) in total water savings over the past seven years.

The Integrated Plan's vision is one of improving water supplies, achieving drought resiliency, responding to climate change, providing fish passage, and restoring the ecosystem, while improving economic vitality and supporting growing communities. As the Integrated Plan progresses towards its Middle Development Phase, work will continue to adapt and change to meet funding needs that evolve over time. The Integrated Plan's innovative funding partnerships and adaptable management approach are two keystones to the plan's success. Together, the plan's federal-state-tribal-local-private stakeholders continue their commitment in funding projects spanning all seven elements of the Integrated Plan.

## Investing in the Yakima River Basin

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Investments, both large and small, range from federal and state agencies to local and non-profit organizations and continue to provide funding support for the Integrated Plan. Over the last seven years, local and federal government investments have exceeded \$299 million with the state investing over \$250 million in the Integrated Plan. Potential local, state, tribal, federal, and private funding sources are discussed further in this report. The ability to leverage funding from multiple sources is instrumental in maintaining the financial support and long-term viability of the Integrated Plan.

Project budgets take into consideration both the state's two-year (biennial) budgetary cycles and the federal three-year budgetary cycles. These different funding cycles add layers of complexity in moving projects forward, especially large-scale long-term construction projects spanning multiple biennia. In order to meet a project's funding needs from start to finish several factors need to be taken into consideration. To maintain adequate funds across multiple biennia, the project budget should consider not only the potential for funding to vary from biennia to biennia, but also the changing costs of a project as it moves through the various phases, such as feasibility to design and construction to operation and maintenance.

A large benefit to the Integrated Plan is its flexibility, both in project timelines and financing. As is the nature of any project with a wide-reaching scope, Integrated Plan projects can be adapted as needed. While this flexible-funding approach is beneficial in many ways, it does complicate funding projections. In an effort to simplify estimating funding needs, the Department of Ecology's Office of

Columbia River (OCR) partnered with Western Washington University, who developed a funding model that allows projected costs to be adjusted in response to timeline and financing changes.

Integrated Plan projects are cataloged into one or more of the plan's seven elements. These elements include the Water Market Reallocation Element, Habitat/Watershed Protection and Enhancement Element, Reservoir Fish Passage Element (Fish Passage Element), Structural and Operational Changes Element, Enhanced Water Conservation Element, and Groundwater Storage Element. More information on the seven elements of the Integrated Plan can be found on page 7.

The current estimated cost for implementing the full Integrated Plan is \$4.1 billion. The Surface Water Storage Element holds the highest estimated full buildout costs at approximately \$2.2 billion. This element will provide benefits to an array of users including, but not limited to, irrigation, municipal & domestic, industrial, recreation, and instream flows. At this time, specific local beneficiaries of surface storage have not been identified, however the beneficiaries will contribute to the cost recovery of future storage projects.

The lowest projected full buildout cost estimate is for Water Market Reallocation, at about \$4 million. The remaining five elements, Habitat/Watershed Protection and Enhancement, Reservoir Fish Passage, Structural and Operational Changes, Enhanced Water Conservation, and Groundwater Storage Elements have costs that range between \$123 million to \$530 million. Projects of this caliber require a variety of funding sources as represented in [Table 1](#) (page 4).

## 2013-2029 - Initial Development Phase

The Initial Development Phase (IDP) is the first phase of the Integrated Plan followed by the Middle and Final Development Phases. The Integrated Plan's Programmatic EIS contemplated a variety of implementation timelines from as little as 18 years to 30 years and more. Given the rate of planning, environmental review, construction, and financing since the state legislation<sup>3</sup> passed in 2013, a 30-year implementation schedule seemed most realistic. Following federal authorization<sup>4</sup> in early 2019, the timeline for the first phase has been adjusted from 2013-2023 to a 2013-2029 timeframe. This realignment provides the federal government a 10-year window to support and implement its share of the initial development phase.

The current cost estimate to implement the IDP is approximately \$953 million. This estimate falls within the range of previous cost estimates that varied from \$896 million to \$990 million in any given year of the IDP. Out of this current cost estimate of \$953 million, 69% (\$659 million) is estimated to be provided by federal and other funding sources and 31% (\$294 million) to be provided by the state. These shifting costs can be attributed to several factors including adjustments to project timelines and high dollar projects being placed on hold. It should be noted that these varying cost estimates do not change the full buildout cost estimate of \$4.1 billion. We recognize the challenges ahead in obtaining further investments and capacity to realize the full buildout of the Integrated Plan, but implementing projects across a gamut of partners will provide a reliable water supply future for the Yakima River Basin.

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<sup>3</sup> RCW 90.38

<sup>4</sup> John D. Dingell, Jr. Conservation, Management, and Recreation Act of 2019, Pub. L. No. 116-9, 133 Stat. 580.

# From YRBWEP to Integrated Plan

## 1979 - Studies Authorized



The Yakima River Basin Water Enhancement Project began after devastating drought in the 1970s when Congress authorized a study to find solutions to the basin's water supply problems.

## 1984 - YRBWEP Phase I - Fish Passage



Early studies identified fish passage issues. Fish screens and ladders were built at diversion dams to help fish move freely upstream to spawn.

## 1994 - YRBWEP Phase II - Conservation



The next phase conserved water for agriculture and instream flows; acquire and restore important habitat in the Yakima River watershed.

## 2009 - YRBWEP Phase III - Integrated Plan



The Integrated Plan is a watershed-scale, balanced approach to sustainable water supply for families, farms, and fish.

## Integrated Plan

The Integrated Plan is comprised of seven elements. The map below shows the location of a few example projects from each element.

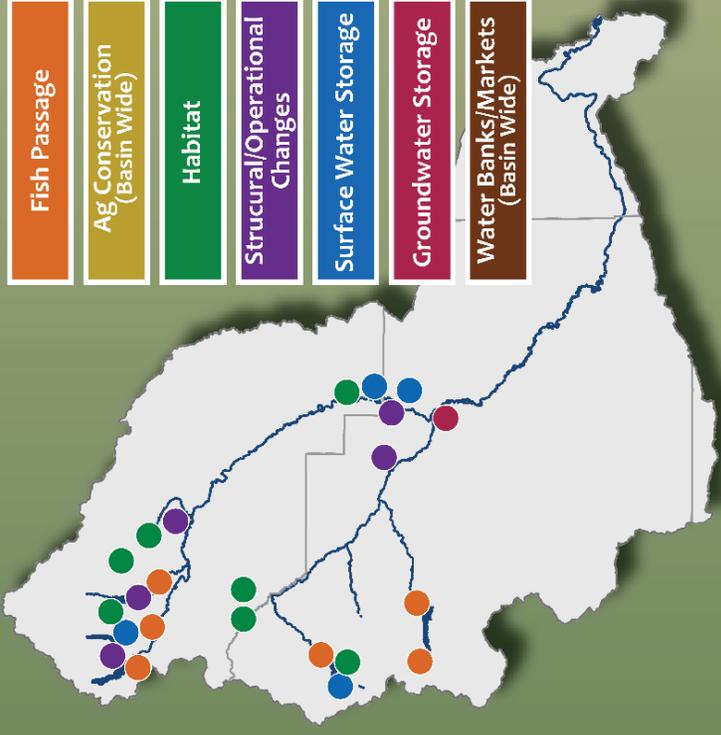


Figure 1: From Yakima River Basin Water Enhancement Project (YRBWEP) to Integrated Plan

**Table 1: Funding Sources Reference Guide**

Type	Funding Source
Federal	<u>Grants (Federal)</u> : Like state funding, this revenue stream takes the form of non-repayable grant money given to the Integrated Plan by the federal government that does not require repayment.
State	<u>Grants (State)</u> : Money from the state would most likely be in the form of an appropriation from the Capital Budget. Such an appropriation would not be repayable by the Integrated Plan and would instead be classified as State grants.
Local	<u>County Level Funding</u> : this funding stream most likely takes the form of a property or sales tax increase and probably needs to be done in multiple counties to make an impact for such a large-scale project unless this money was allocated to a specific aspect of the Integrated Plan.
	<u>Irrigation Districts</u> : Irrigation Districts are a self-governing subdivision of the State government that have taxing power for the use of water for irrigation.
	<u>Local-Improvement Districts (LIDs)</u> : LIDs are districts that are benefited by the outcomes of a large-scale project. These districts are taxed proportionately to the benefit they receive from the project in question and can be used to help fund projects such as the Integrated Plan.
Other	<u>Local Partnerships</u> : Local partnerships are often made with stakeholders of the project who have a financial or other interest in the outcome of these projects. These can include but are not limited to reclamation and reservation groups, businesses, municipalities, and regional alliances and communities.
	<u>Tribal Funds</u> : Tribal funds can include budget-allocation from tribal municipalities such as the Bureau of Indian Affairs, or it could include access to tribe-specific grants offered by external parties.

Many of the projects in the Integrated Plan do not produce revenue streams. As such, state and federal funds provided to the Integrated Plan are expected to take the form of non-repayable grants.

Future water supply development projects have the possibility of future revenue from the irrigation, municipal, residential, industrial, or commercial water usage, but until these or similar multi-use water supply projects are constructed at this point in the calculating revenue streams is premature.

# Introduction

Created by the Department of Ecology (Ecology) under the directive of RCW 90.90 in 2006, the Office of Columbia River (OCR) invests in projects that provide water supply solutions for families, farms, and fish across Central and Eastern Washington.

Over the past 14 years, OCR has successfully developed approximately 466,689 acre-feet (ac-ft.) of reliable and sustainable water supplies benefiting both instream needs and out-of-stream uses. This amount of water is equivalent to adding two and a half times the storage capacity of U.S. Bureau of Reclamation's Keechelus Reservoir near Snoqualmie Pass. OCR continues to pursue and implement projects and programs that will develop an additional 600,000 ac-ft. over the course of the next decade.

The goals of the Yakima Basin Integrated Water Resource Management Plan (Integrated Plan), as laid out in RCW 90.38, are directly in-line with OCR's mission to aggressively pursue water supplies to meet current and future water demands for both in-stream and out-of-stream benefits in the Columbia River Basin.

## Yakima River Basin

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Nestled within the Columbia River Basin in Central Washington, the 6,155 square mile Yakima River Basin is home to 427,080<sup>5</sup> people, including approximately 10,000 members of the Yakama Nation. The Yakima River Basin supports 2.6 million acres of farmland generating 32% of the state's agricultural sales, and provides over 40,000 jobs in the food processing and agricultural industries alone<sup>6</sup>. All of this exists within a basin that struggles with chronic water supply shortages from year to year dependent upon variable seasonal precipitation.

In 2013, the state legislature passed the Yakima River Basin Water Resource Management Act. This act, codified under RCW 90.38, authorizes the Ecology to implement the extensive 35-year Integrated Plan. As the third phase of the federal Yakima River Basin Water Enhancement Program (YRBWEP), the Integrated Plan builds on YRBWEP's previous fish screening, fish passage and water conservation work by building a framework that aims to improve water supply and habitat restoration solutions at a watershed scale.

The Integrated Plan is a collaborative effort developed by Ecology and the U.S. Bureau of Reclamation (Reclamation), in partnership with the Yakama Nation and a group of stakeholders known as the YRBWEP workgroup (Appendix A), that provides basin-wide water supply improvements for both instream and out-of-stream uses, restoring fish runs, and ecosystem restoration.

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<sup>5</sup> Population estimates provided by the Office of Financial Management, Forecasting and Research Division. Population Change and Rank for Counties, April 1, 2010 to April 1, 2020

<sup>6</sup> ECONorthwest. (2017). Water Security for the Yakima River Basin's Economy, Communities, and Watersheds. Washington Department of Ecology (Publication No. 17-12-010).

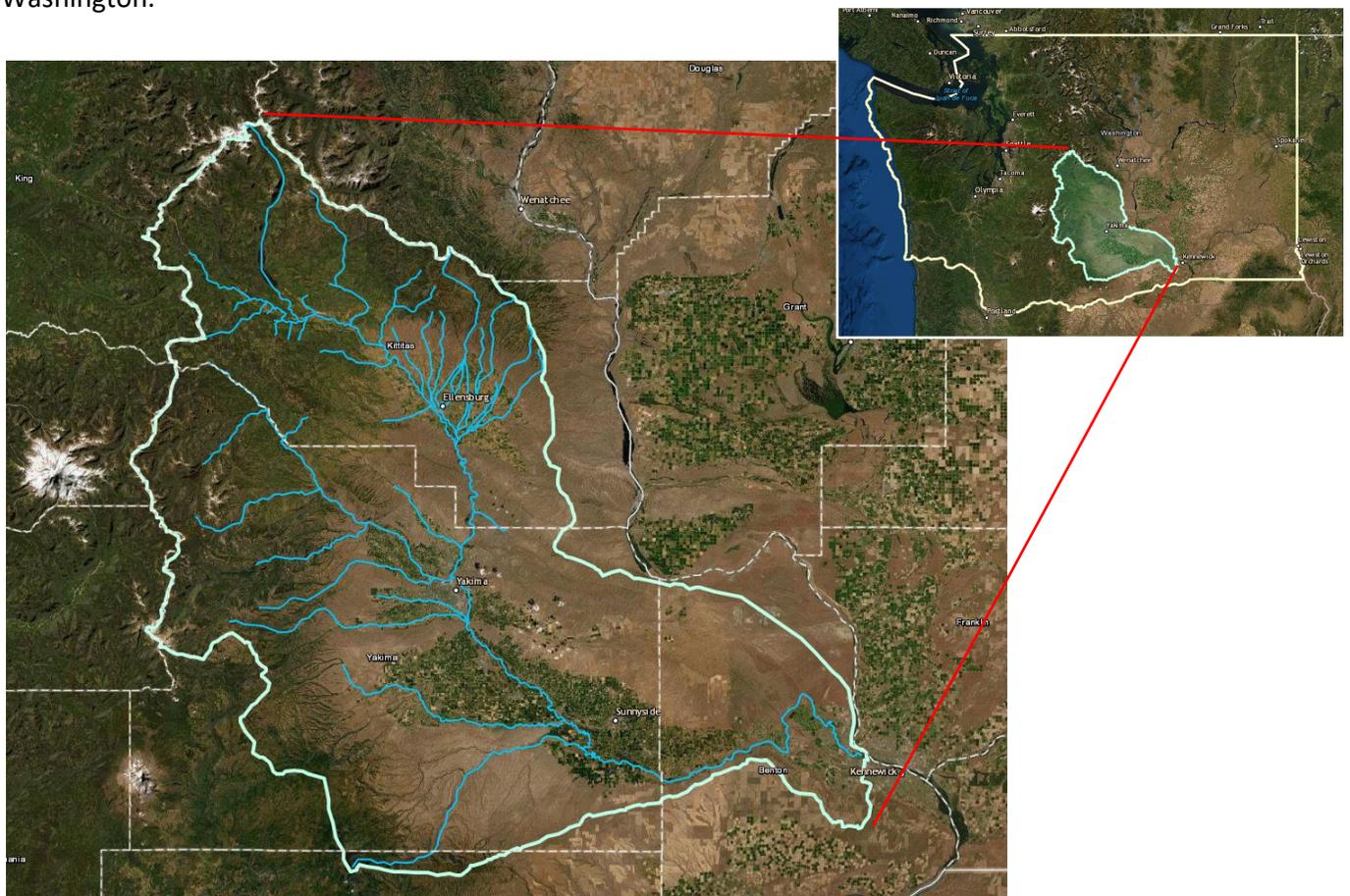
## Geographic impact and stakeholders

*Geographic Impact and Stakeholders sub-section compiled by Western Washington University.*

The Integrated Plan encompasses multiple counties and draws interest from many stakeholder agencies, organizations, and other entities (Appendix A - Members of the Yakima River Basin Water Enhancement Plan Workgroup). Many stakeholders are located within the three primary counties – Benton, Kittitas, and Yakima – however, other stakeholders operate at a statewide or national level. The types of stakeholders involved range from local cities, irrigation districts, agricultural groups, and environmental groups to the Yakama Nation, Washington State, and the federal government.

With this in mind, the official geographic boundaries of the Integrated Plan cover most of Benton County, Kittitas County, and Yakima County, including the larger cities within those counties such as Prosser, Yakima, and Ellensburg. The region also covers a small corner of Klickitat County. The upper and west boundaries follow county lines, bordering King and Chelan Counties (Figure 2).

It is important to note that Integrated Plan projects provide benefits that can extend beyond these county lines. Any major construction project involving water tables, rivers, dams, reservoirs, or fish habitats will undoubtedly have both ecological and economic impacts on many other areas within Washington.



**Figure 2: Integrated Plan Boundaries with Respect to Counties**

Source: The Yakima Basin Integrated Water Resource Management Plan, <https://storymaps.arcgis.com/stories/d78e5021c3554fb8a1af1c5020b8d741>

## Goals of the Integrated Plan

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- Provide opportunities for fish passage to historic fish spawning and rearing grounds, comprehensive watershed and aquatic protection, as well as ecological restoration that address instream flows and aquatic habitat.
- Improve water supply reliability for municipal and agricultural needs during drought years.
- Develop a comprehensive approach for the conservation of water supplies for crop irrigation, municipal and domestic uses, and power generation.
- Improve the ability of water managers to respond and adapt to the potential effects of climate change.
- Contribute to the vitality of the regional economy and sustain the riverine environment.

## Three phases of the Integrated Plan

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Laid out originally as a 30-year plan, the Integrated Plan is broken into three phases, known as the Initial Development Phase (IDP), Middle Development Phase (MDP), and the Final Development Phase (FDP). Breaking the Integrated Plan into these phases allows for planning to be broken into smaller portions that are more manageable. The year 2020 marks the seventh year of the IDP. Projects implemented during the IDP include site-specific projects studied under the Integrated Plan's Final Programmatic Environmental Impact Statement.

The Integrated Plan was codified by the Washington State Legislature to begin work in 2013, while the federal government officially authorized the project in 2019. This has shifted the timeline of the three phases tentatively to the following fiscal years:

1. Initial Development Phase (IDP): 2013-2028
2. Middle Development Phase (MDP): 2029-2038
3. Final Development Phase (FDP): 2039-2048

## Seven elements of the Integrated Plan

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Integrated Plan projects are organized within one or more of seven elements, which are associated with the essential watershed goals identified in the Integrated Plan's Programmatic Environmental Impact Statement (PEIS)<sup>7</sup>. In addition to meeting these goals, many projects can potentially provide secondary benefits such as improved economic sustainability, ecotourism, and outdoor recreation opportunities.

The seven elements are as follows:

- *Habitat/Watershed Protection and Enhancement* – Protecting critical habitats for fish and wildlife through land acquisition, watershed protection, habitat restoration and enhancement

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<sup>7</sup> The full Integrated Plan PEIS can be found online at :  
<https://fortress.wa.gov/ecy/publications/documents/1212002.pdf>



**Example of large wood used to restore stream/floodplain connection.**

Photo Credit: Tim Poppleton (OCR), 2016

projects. This will improve both critical habitats and water quality as floodplains are restored, runoff is reduced, and human impacts are minimized.

In 2020, the Washington State Department of Fish and Wildlife (DFW) and the Yakama Nation continue working together on the federally listed Bull Trout rescue and captive rearing programs. The Yakama Nation and DFW work with the Mid-Columbia Fisheries Enhancement Group, Kittitas Conservation Trust, and other partners to rescue juvenile Bull Trout stranded in shallow pools as they dry up along the Kachess River and Gold Creek during hot summer months. Rescued fish are transported to the Yakama Nation hatchery where they will be reared until they are large enough to better survive reintroduction to the rivers from which they came.

- *Fish Passage* – Providing both upstream and downstream fish passage at the five major federal Reclamation storage reservoirs in the basin, allowing fish to reach the clean cold headwaters of their historic spawning grounds.

Construction of the lower level intake ramps for the Cle Elum Fish Passage with the lowest level now complete and construction currently taking place on the next (second lowest) intake ramp. Installing multiple intake ramps at different levels allows juvenile fish to access the helix when the reservoir level fluctuates up to 63 feet. During juvenile fish outmigration, this innovative transport system safely transports fish from the reservoir out to the Cle Elum River.

- *Enhanced Water Conservation* – Saving water through improving the precision of water delivery and operational efficiency and put this saved water to use improving instream flows, water supply reliability, and drought resiliency.

Currently, 58 different enhanced water conservation projects save approximately 34,951 ac-ft. of water annually, bringing the Integrated Plan closer to its IDP goal of conserving 85,000 ac-ft. Water conservation projects across the basin, include canal piping, lining and sealing by

irrigation districts, low water use landscaping, and other efforts promoting irrigation efficiency improvements. These projects are led by a wide range of Integrated Plan partners including the Yakama Nation, Kittitas Reclamation District, Roza Irrigation District, Kennewick Irrigation District, the City of Yakima, and others.

- *Structural and Operational Changes* – Improving operational efficiency and flexibility at existing in-basin facilities through conveyance improvements and facility expansion.

During 2020, Cle Elum Pool Raise shoreline protection work continued throughout the project area. Wish Poosh Campground shoreline stabilization construction and two embankment areas along Salmon La Sac Road commenced in September 2020. Once complete, this project will allow the reservoir the ability to hold an additional 14,600 ac-ft. of water that will be put towards augmenting instream flows.

- *Surface Water Storage* – Creating 450,000 ac-ft. of new surface water storage to support instream and out-of-stream uses.

After the release of the Kachess Drought Relief Pumping Plant (KDRPP) and Keechelus-to-Kachess Conveyance Project (KKC) Final Environmental Impact Statement (FEIS) in March of 2019, Reclamation and Ecology issued its Record of Decision recommending continued analysis for a Floating Pumping Plant option. The Keechelus Reservoir-to-Kachess Reservoir Conveyance Project was not carried forward in this decision at this time.

Roza Irrigation District Board of Directors made the decision to move forward with the floating pumping plant design previously presented in the Supplemental EIS. An additional Supplemental (Tier 2) EIS will evaluate and analyze site-specific issues for the floating pumping plant alternative. Roza, Reclamation, Ecology, and other cooperating agencies are working diligently to advance project designs and move the environmental review piece of the project forward.

- *Groundwater Storage* – Recharging aquifers to store surface water for use later to augment instream flows and out-of-stream needs during the drier times of the year.

Several Integrated Plan groundwater studies are underway including Central Washington University's Geochemical Study of Groundwater in Potential Storage Sites. This study analyzes recharge systems and groundwater surface water interactions to determine which aquifers are mainly recharged naturally and those primarily recharged by irrigation water runoff. The information gained through this study will aid in determining future groundwater management decisions.

- *Water Market Driven Reallocation* – Improving water banking and exchange programs by reducing barriers that impede the exchange of water between districts, which may require changes to existing laws and policies.

Kittitas Reclamation District (KRD) and their partner, Trout Unlimited (TU), continue to analyze water banking and market based reallocation of water within the Yakima River Basin. In 2020, KRD and TU continued stakeholder outreach efforts, working with Washington State University on a water market study, GIS-mapping analysis, and analysis of water transfer rules. Combined, these efforts provide a foundation for the development of a Yakima Basin specific Smart Market water reallocation plan.

# Adaptive Management

The adaptive management style employed by the Integrated Plan continues to be one of the driving forces in meeting the ever-changing project needs. The Integrated Plan's ability to adapt in response to the changing needs of a project, such as timelines shifting from one biennium to the next, allows for providing alternative funding solutions. The ability to move funds from one project to another, or from one development phase to another, allows one project to move forward while others are working through unanticipated delays, such as changes to design or even extreme weather events.

Multi-year large-scale Integrated Plan projects require long-term funding, planning, and coordination at local, state, and federal levels of government. In 2013, Reclamation and the members of the Yakima Basin Integrated Plan's Implementation Committee developed the Washington DC Leadership Group charged with engaging senior-level executives within the federal government and coordinating natural resource activities and investments in the Yakima River Basin.

In 2019, federal support for the Integrated Plan was secured with the passage of the John D. Dingell, Jr. Conservation, Management, and Recreation Act, which commits 10-years of federal government support in implementing the Integrated Plan's Initial Development Phase. To incorporate this federal legislation into the IDP timeline, the IDP now extends from FY 2013 to FY 2028 (July 2013 – June 2029), which differs from the original IDP timeline of July 2013 to June 2023.

When budgeting cost estimates for the wide range of short-term (1-2 years) and long-term (>10 years) Integrated Plan projects, project managers must take into consideration that funding needs must be broken down to fit into the State of Washington's biennial (two-year) funding cycle. State funding requests for the 2021-2023 biennium are \$43.9 million, or 4.6% of the full Integrated Plan. This funding request is \$101 million less than previously projected for the 2021-2023 biennium. This change in funding requests can, in part, be attributed to the shifting of project timelines to future biennia, high cost projects coming offline or delayed, lower cost projects coming online, and other changing project components.

The Tieton Dam Fish Passage and Keechelus to Kachess Conveyance (KKC) projects are two projects of note that have either shifted schedule to span multiple phases or have had extensive changes to their original project proposal. As discussed in the previous (2018) Integrated Plan Cost Estimate and Financing Plan Report, delaying the Tieton Dam Fish Passage project starting date, originally scheduled for the 2019-2021 biennium, allows the Cle Elum Fish Passage project to remain fully funded and on track for completing the construction of the juvenile fish passage facility completion goal by 2022.

Shortly after the release of the Kachess Drought Relief Pumping Plant (KDRPP) Final Environmental Impact Statement (FEIS) in March of 2019, Reclamation released their Record of Decision to carry KDRPP forward for further analysis without the KKC project. Roza Irrigation District Near Shore Pumping Plant modified design (Alternative 4) will undergo further feasibility analysis and design investigations in KDRPP's next (Tier 2) EIS. Current cost estimates and schedules are expected to change as additional analysis of KDRPP moves ahead without KKC.

## Funding challenges and strategies

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Even with adaptive management, funding Integrated Plan projects have unique challenges. For instance, several multiple large-scale construction projects are anticipated to reach their most expensive build-out schedules at the same time. For example, this overlap will most likely occur in 2020-2025 with the Cle Elum Fish Passage and Kachess Drought Relief Pumping Plant projects. While the projects' overall cost do not change, this creates a scenario for future biennium requests to be higher than previous biennial requests in order to move multiple large-scale projects forward simultaneously.

Construction costs of large-scale projects spanning several biennia must also be taken into consideration. For instance, if work must be paused due to insufficient funding the overall cost of the project can increase due to increased material and labor costs, and heavy equipment mobilization of site and subsequent re-mobilization onsite once funding is secured. Other challenges include potential changes to project timelines and the different funding cycles between federal (three years) and state (two years) budget calendars.

Another funding challenge facing the Integrated Plan is the potential for cost overruns of long-term projects. Project cost overruns can occur for a number of reasons, ranging from design changes to delays and damage due to extreme weather events. Cost overruns can delay schedules and escalate not only the cost of a project, but also the overall cost of the Integrated Plan. Planning for potential cost overruns before they happen is the primary method of avoiding unforeseen cost overruns from occurring. By using this method alongside other steps, such as including local pledge for matching funds in excess of funding needs or using supplemental budget request, cost overruns have not been a major challenge for the Integrated Plan up to now.

## COVID-19

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The COVID-19 pandemic put the adaptability of the Integrated Plan to the test in 2020. On February 29, 2020, Governor Jay Inslee declared a state of emergency due in response to public health concerns posed by the coronavirus disease 2019 (COVID-19) outbreak. In March, state agencies commenced telecommuting plans for employees, marking the beginning of a new normal of working from home for the months to come. The Governor's "Stay Home, Stay Healthy" order was extended several times.

Integrated Plan committees, sub-committees, and workgroups were able to continue their work through email, phone conferences, and virtual online meetings. Project design and planning largely took place in home offices rather than contracted business offices, as many adapted to the rapidly changing impacts of COVID-19.

The lockdown took a toll on the economy and state revenue provided by tax dollars. Following the projections of major budget shortfalls over the next two biennia, Governor Inslee froze hiring of non-essential personnel, signing non-essential service contracts, and equipment purchases for all agencies under his direction<sup>8</sup>. Projects providing essential services, including water for agricultural and municipal purposes, are exempt from this directive. While some Integrated Plan projects fall

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<sup>8</sup> Directive of the Governor 20-05 at <https://www.ofm.wa.gov/about/covid-19-hr-accounting-and-budget-guidance-state-agencies/directive-freeze-hiring-personal-services-contracts-and-equipment-purchases>

under these categories, all Integrated Plan projects fall under pre-authorized exemption as Integrated Plan projects are funded entirely by capital budgets that are backed by bonds, which are repaid by general funds or tax revenues.

COVID-19 halted everyday life at a global scale. With social distancing protocols and quarantine requirements set in place by Governor Inslee in early 2020, work on Integrated Plan construction projects were temporarily paused to develop mandated COVID-19 Protection Plans. COVID-19 impacts to Integrated Plan efforts include the loss of data collection for spring and early summer snowmelt as field staff were ordered to stay home. The inability to get into the field to download transducers that reached their data life cycle has caused a data gap that will need to be addressed during the spring and early summer snowmelt in 2021.

While the full impacts of COVID-19 on Integrated Plan projects, such as shifted timelines, are unknown at this time, work will continue to adapt and change to meet project needs and safety and health requirements.

## Adaptive plan in action

The State’s biennial (two-year) budget cycle requires Integrated Plan project costs to be broken down by their various phases in order to fit into this two-year funding schedule. The Cle Elum Fish Passage project (CEFP) demonstrates how to accomplish this. Figure 3 illustrates how the five phases of a project are worked into the State’s biennial cycle from the early 2000’s to 2031. The two most expensive phases of the project are the construction of the juvenile and adult fish passage facilities. Costs of these two phases range from over \$20 million down to under \$5 million during any given biennial cycle. The juvenile and adult fish passage facility construction phases are spread across the 2015-2017 through 2027-2029 biennia.

Once construction is complete, CEFP will move into the operation and maintenance phase, which is the lowest cost (below \$5 million per biennium) phase of the entire project. By using the lessons learned from experiences working together towards common goals, the members of the Integrated

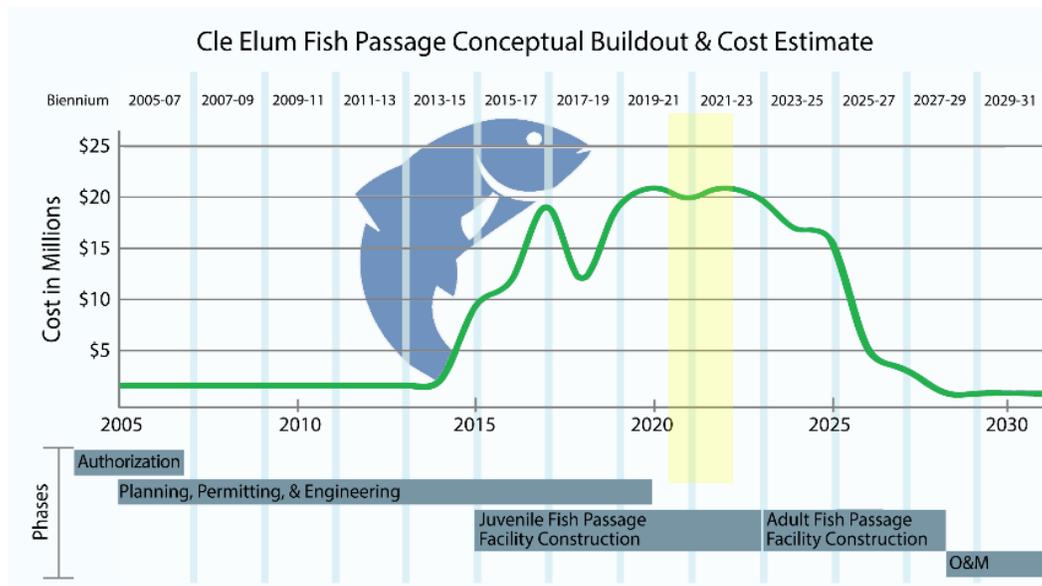
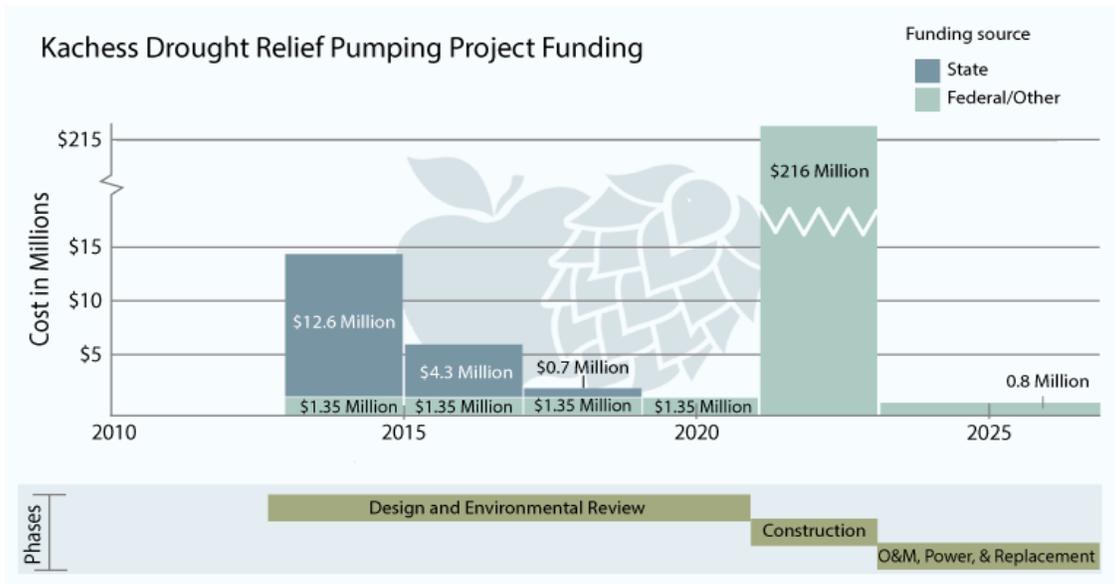


Figure 3 Cle Elum Fish Passage Conceptual Buildout & Cost Estimate



**Figure 4: Kachess Drought Relief Pumping Project Funding**

Plan will continue collaborating to maneuver through future funding challenges. By planning ahead, breaking down project costs by phases, and incorporating potential cost overruns, the Integrated Plan reduces the financial risks associated with projects that span multiple biennia.

The Kachess Drought Relief Pumping Plant (KDRPP) is another long-term, large-scale project that faces similar challenges. Currently in its environmental review and design phase, this project spans multiple years with funding needs fluctuating over time as the project moves through its phases such as design and feasibility to construction to operation and maintenance (Figure 4). In March of 2019, the Kachess Drought Relief Pumping Plant and Keechelus-to-Kachess Conveyance Project Final Environmental Impact Statement (EIS) was released with Reclamation’s Record of Decision to carry forward Roza Irrigation District’s (Roza) Near Shore Pumping Plant modified design (Alternative 4) for further review in KDRPP’s next (Tier 2) EIS. Alternative 4 consists of a Floating Pumping Plant and support facilities that, once operational, allow access to up to an additional 200,000 acre-feet of water that is currently inaccessible due to being held below the elevation of the existing gravity outlet.

Alongside Ecology and Reclamation, Roza is actively working to move the environmental review, design, and permitting processes forward in preparation for the issuance of a supplemental EIS. Roza will finance the construction (\$200+ million), and operation and maintenance of the proposed KDRPP project. The opportunity for other proratable (junior) irrigation districts to participate in KDRPP is still available.

The Integrated Plan’s ability to bring in support from various agencies, such as Roza funding put toward KDRPP, is possible due to the plan’s robust partnerships, including the Yakama Nation, county governments, cities, major irrigation districts, and environmental groups. Once secured, these funds can be put towards environmental and permitting review, public outreach, project implementation and construction, and other necessary tasks.

The Yakima County Blue Slough Reconnection Project and the Kittitas Reclamation District’s (KRD) analysis of water banking and market-based reallocation of water are two examples of utilizing a variety of funding sources. The KRD water marketing analysis/report, conducted in partnership with

Trout Unlimited and Mammoth Trading, has an expected cost of \$739,000. This analysis/report will provide strategies to improve water-banking processes, specifically funded by a federal WaterSMART grant (27%), TU funds (4%), and Ecology's Water Resource Program funds (21%) and OCR/YBIP funds (48%). Yakima County's Blue Slough Reconnection Project work for the reconnection of Blue Slough to the Yakima River has a total project cost of \$12.3 million and has a similar combination of federal, state, and local funding sources, specifically from US Army Corp of Engineers, Ecology, and Yakima County funds. This project is one component of the larger Yakima River Gap-to-Gap Ecosystem Restoration project. More information on the Yakima River Gap-to-Gap Ecosystem Restoration Project and KRD water marketing analysis can be found in the Integrated Plan's 2019 Implementation Report<sup>9</sup>.

Innovative partnerships with federal, state, local, and other stakeholders is key to the Integrated Plan's ability to move projects from design to completion in a timely manner, providing benefits for the basin as a whole. Additional funding opportunities, including grants, philanthropic trust funds, and third party funding through green investments<sup>10</sup>, may arise to support projects implemented under the Integrated Plan.

## **Office of Columbia River Integrated Plan staffing needs**

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When OCR first began implementing the Integrated Plan in 2013, there were enough capital and operational dollars to support one full time employee (FTE) to oversee 32 Integrated Plan projects. By 2020, that number of projects has doubled, while the number of OCR staff dedicated to managing Integrated Plan projects has increased from one to three full time employees (FTE).

One of OCR's three Integrated Plan focused FTEs is dedicated as a liaison between Reclamation and Ecology. This position is funded through a cost share (50/50) with Reclamation and manages YRBWEP Phase 2 water conservation projects, Integrated Plan enhanced water conservation projects, and tracks instream flow savings achieved by these conservation projects.

WDFW has been providing technical and policy support to OCR since 2013. The equivalent of 1.5 FTEs provide biological expertise for water supply and habitat conservation projects to recover salmon, steelhead, bull trout and many other species including spotted owl. In addition, WDFW chairs (0.5 FTE) the Habitat Subcommittee ensuring the fish managers from state, federal, tribal, and non-profit organizations are coordinated and working harmoniously to achieve Integrated Plan goals.

As OCR continues to take on increased management and oversight of state capital funded Integrated Plan projects, OCR and WDFW needs additional FTE capacity to continue providing Integrated Plan project support to private, local, state, federal, and tribal partners in a timely manner. Additional FTE capacity focused on YBIP implementation will ensure all participant funds are used to best implement the plan, ensure conformance with state and federal law and provide the public with increased water supply and economic certainty.

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<sup>9</sup> The [Yakima River Basin Integrated Water Resource Management Plan 2019 Implementation Status Report](https://fortress.wa.gov/ecy/publications/documents/1912005.pdf) can be found on Ecology's website at: <https://fortress.wa.gov/ecy/publications/documents/1912005.pdf>

<sup>10</sup> As defined by the [World Green Economy Council](http://www.wgeco.org) (wgeco.org): "Green investments are traditional investment vehicles (such as stocks, exchange-traded funds and mutual funds) in which the underlying business(es) are somehow involved in operations aimed at improving the environment."

# Cost Estimates and Funding

*Office of Columbia River contracted with Western Washington University (WWU) for the development of a customizable funding model. The following sections (Cost Estimates and Funding and Funding Model and Scenarios) were compiled by WWU.*

## Project costs

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The Integrated Plan brings with it both a great deal of project flexibility, as well as many points of financial and timeline uncertainty. These variables fall into two main categories – funding and project timelines – which represent many of the strengths of the Integrated Plan’s structure and some of the potential challenges that the Plan has overcome and may face with future implementation.

### Funding

*Strengths:* The wide-ranging benefits of Integrated Plan’s projects bring together a diverse group of project partners and interest groups and open the door to multiple sources of funding. Potential funding sources include Washington State (Appendix B: State Funding), the federal government (Appendix C: Federal Funding), local funding (Appendix D: Local Funding ), and other sources (Appendix E: Other Funding).

*Potential Challenges:* Much of the funding received for the Integrated Plan comes from Washington State or the federal government. As such, most funding is only secured in 2-3-year intervals due to state and federal budget cycles, which necessitates that projects that are expected to take more than 2-3 years have an implementation timeline that can be flexible based on available funding. In addition, state and federal funding may be harder to come by over the next few years due to the COVID-19 pandemic economic impacts that have negatively impacted state and federal budgets.

### Timeline

*Strengths:* With two and a half phases remaining, it is possible to continue to be flexible with when projects start and how quickly they progress. This means that if funding needs are not met or a project faces unexpected delays, that some projects can be pushed back, and others can be moved forward to keep the overall Integrated Plan on track.

*Potential Challenges:* Flexibility can also make planning and timelines complicated. It will likely become more difficult to adapt to funding shortfalls or delays as the end of the Final Development Phase approaches. Additionally, this approach may add cost if funding is delayed resulting in multiple mobilizations of heavy equipment may be needed.

**Table 2: Estimated Costs for Integrated Plan 35 Year Implementation Project<sup>11</sup>**

<b>INTEGRATED PLAN ELEMENT</b>	<b>INITIAL DEVELOPMENT PHASE</b>	<b>MIDDLE DEVELOPMENT PHASE</b>	<b>FINAL DEVELOPMENT PHASE</b>	<b>FULL DEVELOPMENT COSTS</b>
<b>Habitat/watershed protection and enhancement</b>	\$374,400,000	\$53,050,000	\$53,050,000	\$480,500,000
<b>Fish passage (6 projects)</b>	\$185,200,000	\$244,800,000	\$100,000,000	\$530,000,000
<b>Surface water storage</b>	*\$247,700,000	**\$986,425,000	**\$982,425,000	\$2,216,550,000
<b>Groundwater storage - regional and municipal</b>	\$7,400,000	\$57,900,000	\$57,900,000	\$123,200,000
<b>Structural and operational changes</b>	\$39,900,000	***\$143,100,000	***\$143,100,000	\$326,100,000
<b>Enhanced water conservation</b>	\$94,900,000	\$167,300,000	\$167,300,000	\$429,500,000
<b>Market driven reallocation</b>	\$3,100,000	\$475,000	\$475,000	\$4,050,000
<b>Integrated plan update costs</b>		\$1,500,000	\$1,500,000	\$3,000,000
<b>Total</b>	<b>\$952,600,000</b>	<b>\$1,654,550,000</b>	<b>\$1,505,750,000</b>	<b>\$4,112,900,000</b>

\* Keechelus to Kachess Pipeline was classified as Operational Modifications in the IDP Costs. The Kachess Reservoir Drought Relief Pumping Plant Project is included as Surface Water Storage.

\*\* Average costs of next two projects recommended under the Integrated Plan, plus updated water needs analysis and Columbia River availability analysis. The cost of subsequent storage projects described in the Integrated Plan have been averaged and divided equally between the MDP and FDP because final decisions regarding whether to proceed with those projects and project sequencing have not been made. MDP costs also include estimates for providing updated water needs and Columbia River water availability analyses.

\*\*\* Includes prorated costs of Wapatox Canal Conveyance, KRD Main Canal, South Branch Modifications and Roza subordination. Estimated costs for the Wapatox Canal Conveyance, KRD Main Canal and South Branch Modification, and Roza Subordination projects have been totaled and divided equally between the MDP and FDP because decisions regarding project sequencing have not been made.

<sup>11</sup> Table 2 is developed and maintained by OCR

## Full three-phase project cost estimates

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Current cost estimate for the full buildout of the Integrated Plan is \$4.1 billion, remaining consistent with previous Cost Estimate and Financing Plan reports and the PEIS. When the \$4.1 billion full buildout cost is broken down by individual phases, 24% of these costs fall in the Initial Development Phase (IDP), 40% in the Middle Development Phase (MDP), and 36% in the Final Development Phase (FDP) (Table 2). These costs<sup>12</sup> are high-level estimates that are continually refined as projects go through feasibility studies and design.

Looking at the seven elements at the center of the Integrated Plan, the majority of costs fall under the Surface Water Storage element (53.9 percent). The remaining elements individually represent a significantly smaller fraction of total Integrated Plan implementation costs: Reservoir Fish Passage (12.9 percent), Habitat/Watershed Protection and Enhancement (11.7 percent), Enhanced Water Conservation (10.4 percent), Structural and Operational Changes (7.9 percent), and Groundwater Storage (3.0 percent). Market Reallocation and updates to the Integrated Plan are each expected to account for approximately 0.1% of the 3-phases of the Integrated Plan. Additionally, operation, maintenance, and financing costs will likely extend beyond the 35-year horizon (FY 2048).

## Initial development phase costs and funding

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The Initial Development Phase (IDP) of the Integrated Plan extends from FY 2013 to FY 2028 (July 2013 – June 2029), which differs from the original IDP timeline of July 2013 to June 2023. This updated timeline incorporates federal legislation<sup>13</sup> passed in 2019 that authorizes 10 years of support for the Integrated Plan and is an example of the benefits of implementing an adaptable management plan.

The Initial Development Phase (IDP) is the first of three Integrated Plan phases. Implementation of this phase is expected to cost approximately \$952.6 million, with 69% of funding coming from federal/other sources and 31% coming from state sources (Table 6). A major contributor to the “other” category is the Kachess Drought Relief Pumping Plant (KDRPP), with construction, financing, operation, and maintenance costs being paid by the water users in the Roza Irrigation District who benefit from the project. The irrigation district is expected to contribute approximately \$218.6 million – approximately 22% of total IDP costs.

Major IDP Projects (>\$80 million):

- Kachess Drought Relief Pumping Plant (KDRPP) - \$236.2 million
- Cle Elum Dam Fish Passage - \$131.5 million
- Teanaway Community Forest Acquisition - \$99.3 million
- Bonneville Power Administration, Northwest Power Conservation Council Fish and Wildlife Program(Habitat) - \$94.3 million

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<sup>12</sup> Unadjusted for inflation

<sup>13</sup> John D. Dingell, Jr. Conservation, Management, and Recreation Act of 2019, Pub. L. No. 116-9, 133 Stat. 580.

# Funding Model and Scenarios

## Modeling approach

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For this report, three fixed scenarios are modeled with each scenario varying by the percentage of funding that comes from each of the four identified funding sources (detailed below). Within the model, these three phases allow customization by the user in terms of expected Middle Development Phase and Final Development Phase costs. In the custom scenario, slider bars allow the user to adjust funding ratios for federal and state funding.

The model is highly editable, which is crucial for such a variable plan. As costs change, they are updated in the model and the model automatically calculates the funding stream change necessary to maintain the predicted funding ratios, with the exception of the county-level Local Improvement Districts (LIDs) lifts, which are manually editable by percentage increase to the original levy rate.

The timeline is also modifiable, with four fixed schedules ending in FY 2048, 2058, 2068, and 2078 to match the Integrated Plan phase decades. As there are no planned costs occurring after the projects closure in 2048, the extended timelines serve primarily as a tool for future modeling of debt payback schedules. As there are no proposed revenue sources from this project yet, debt on behalf of this project is not defined in this model.

All money, funds, costs, and other dollar-amounts mentioned in this report or included in the model are in 2020 dollars, and inflation was not calculated for future costs or funding for ease of analysis and reporting, and to remain consistent with previous reports.

## Funding sources

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- **State:** Washington State funding that does not need to be repaid, such as grants or appropriations from the state capital budget or an agency budget. Any appropriation for the Integrated Plan from the capital budget would effectively be a grant, and is defined as such throughout the report. In some cases, grant funds may require some level of fund matching from non-state sources. Washington State has agreed to fund up to 50% of Integrated Plan costs.
- **Federal:** Federal funding that does not need to be repaid, such as grants or appropriations from the federal budget or a federal agency. In some cases, these funds may require some level of state matching or other commitment of non-federal dollars to the project.
- **Local:** This revenue would come from permanent property tax levy lid lifts in Benton, Kittitas, and Yakima counties. The maximum allowable levy rate is \$1.80 per \$1,000 in assessed value; however, none of the scenarios modeled would require property taxes to reach that level. This could also include Local Improvement District revenue in the future, if more information becomes available.
- **Other:** Partnerships with utility or irrigation districts – similar to the KDRPP project – city projects, investments by local businesses, funding from conservation districts, and investments from other stakeholders or interest groups.

## Limitations

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In modeling future funding for the Integrated Plan, a few factors restrict the process in different ways. The biggest limitation to the model is data availability. Due to the flexibility of the Integrated Plan and its dependence on funding availability, expected costs for the Middle and Final Development Phases are not divided into annual terms. As a result, the model is only able to provide funding scenarios in decade terms.

Due to the complex nature of this plan and how localized much of the funding is per project, historic funding streams were not available in a high level of detail. Hence, the model forecasts only “federal” and “state” revenue, as opposed to forecasting the specific source of each federal or state revenue stream such as budget appropriations, grants, or program funds.

## Excluded funding sources

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Some funding sources have not been utilized to-date and therefore were not considered in the model, although they remain viable future financing options for the Integrated Plan; including local improvement district taxes, EB-5 funding, and city-level taxes as described below. First, the 2018 Financing Plan detailed many grant opportunities; however, due to the uncertainty of this funding, specific grants were not included as a part of the model. Many available grants are also for small-dollar projects, which may be applicable on a project-basis, but are not a viable option for the level of detail currently offered in the model.

Another important consideration as a funding stream are Local Improvement Districts (LIDs). LIDs tax land parcels proportionately according to the benefit that the parcel receives in value as a result of a project. The change in property value is determined by the LID through a Special Benefit Analysis. Due to the large geographic scope of the Integrated Plan, this funding model has the potential to play a sizable role in total funding.

However, LID-based funding and start-up costs are unknown due to the scale at which an assessor-based taxation would need to be implemented. Due to data limitations, this funding method was not included in the model. Despite the data shortcomings, LID-based funding should be considered as the Integrated Plan progresses.

Another potential funding source is EB-5 funding, which was utilized in the construction of the Washington state 520 bridge. This project allows foreign investors to invest funds into American infrastructure projects, among other things, in exchange for a green card. This is a potential supplement to other financing sources. However, financial details are limited due to the flexibility of the project, with the specific parameters being defined on a contract-by-contract basis. Despite the modeling restrictions of this funding source, it is worth further consideration as a source of financing.

Finally, there is the possibility of a city-level increase in sales tax as a funding source. Currently, the three largest cities in the Yakima Basin – Yakima, Prosser, and Ellensburg – have additional sales taxes implemented above the state level. However, there are limitations to the use of these taxes, and limitations on the revenue-sharing ratios between cities and counties.

For example, if the City of Yakima was to raise their sales tax by 0.2 percentage points (bringing it to 2% for the city and a combined rate of 8.5%), this would only increase their budget by about \$4 million dollars annually, or \$0.08 billion over the next 20 years. This amounts to approximately 2.5%

of the remaining \$3.1 billion needed for the Integrated Plan. If the full value of the increase in sales tax revenue was allocated for the Integrated Plan, which is unlikely, it would take a coordinated and combined effort on behalf of multiple cities to generate enough revenue to constitute a substantial portion of the Integrated Plan funding needs.

Again, this does not mean that city sales tax increases are not a viable funding option, however, the revenue would be comparatively small and there are political and legal barriers (in terms of revenue allocation) which would need to be overcome. As with LIDs, this funding may be more plausible for a specific project that will be impactful at a city level. It is anticipated that taxes or LID assessments would develop a funding stream for beneficiaries (agricultural or municipal users) on future water supplies developed (i.e. surface storage, groundwater storage, operational changes).

### Scenario 1: High-State funding (50% State)

The first scenario explores a potential outcome where funding is split 50-50 between state and federal grants. The combined total cost for the final two phases of the Integrated Plan is \$3.16 billion, so in this scenario, each funding stream contributes \$1.58 billion. In this scenario, state funding will be approximately \$112 million per biennium. This is a highly unlikely scenario, given that the plan has thus far been successful in obtaining a wide variety of other funds, but will serve as a baseline scenario. The dollar amounts are summed over the middle and final development phases.

**Table 3: Model Scenario 1 - Funding Breakdown**

State Funding	Federal Funding	County Tax Revenue	Other
50%	50%	0%	0%
\$1.58B	\$1.58B	\$0	\$0

### Scenario 2: Mid-State funding (35% State)

This scenario is intended to illustrate a scenario where a broad range of funding sources are utilized, thus reducing the amount of state grants which will need to be obtained to fund the Integrated Plan. Here, only 35 % of funding comes from state grants, and the remaining 65% comes from federal, state, county, and other sources such as local partnerships. The dollar amounts are summed over the middle and final development phases. In this scenario, state funding will be approximately \$81.5 million per biennium.

**Table 4: Model Scenario 2 - Funding Breakdown**

State Funding	Federal Funding	County Tax Revenue	Other
35%	30%	15%	20%
\$1.1B	\$948 M	\$474 M	\$632 M

### Scenario 3: Low-State funding (17% State)

In this scenario, we model a situation where a lower proportion of funding is from state grants. Breakdowns between funding sources are based on estimates of historic ratios with the addition of county tax revenue; however, actual proportions are likely to vary, and this scenario is merely an illustration of one potential outcome. The dollar amounts are summed over two consecutive decades. In this scenario, state funding will be approximately \$39.8 million per biennium.

Table 5: Model Scenario 3 - Funding Breakdown

State Funding	Federal Funding	County Tax Revenue	Other
17%	65%	8%	10%
\$537.2 M	\$2 B	\$252.9 M	\$316 M

### Scenario 4: Customizable modeling option

The final model scenario allows for the user to adjust funding ratios between the five sources. This may be useful to model future funding based on historical ratios (if available) or to take into account funding which has been secured. The rest of the model will update to reflect the chosen scenario.



**Yakima River in Yakima Canyon**

Photo credit: Joye Redfield Wilder (Ecology), 2018

## Funding strategy

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In planning for funding future years of the Integrated Plan, existing and past funding sources should be maintained. This includes existing agreements with state agencies, federal agencies, tribes, local utility and irrigation districts, local governments, environmental groups, and landowners. The Integrated Plan is wide-reaching and houses a wide variety of project types. As such, there are many parties who will be directly impacted by the operations of the Integrated Plan, and may be willing to contribute to its funding, such as irrigation districts or other local municipalities.

Historically, the Integrated Plan has been successful in obtaining funding from federal sources and through partnerships with stakeholders – as is the case with the more than \$200 million contributed by a local irrigation district to the KDRPP project. Continuing to lobby for federal and state funding, as well as, fostering partnerships with stakeholders will be an important part of funding the remaining phases of the Integrated Plan.

It will be important to continue highlighting the value of the projects completed by the Integrated Plan and the wide-ranging support and investment the Plan received. The first step here will likely be to determine how much state grant funding will be available.

From there, supporting the formation of a Local Improvement District (LID) – or multiple districts – to span the areas impacted by the Integrated Plan may be useful. The area of a LID can be determined by commissioning a benefit analysis that determines the impact individual projects may have on the assessed value of the affected properties. The results of this analysis will likely be able to support the possibility of raising county-wide property or sales taxes through the capital project classification. The money generated through these channels will not exceed the benefit to local property-owners and residents in the region.

LIDs are typically utilized on a much smaller scale but considering that some of the Integrated Plan projects have very localized impacts, this strategy can help keep stakeholders involved with the project while some of the financial burden on to those who benefit most from a specific project.

If state and local funds can be committed, the Integrated Plan may have access to more federal grant opportunities (including those for tribal projects). Demonstrating support to the Integrated Plan from cities, counties or other local districts may aid in securing state and federal funding. While our model does not currently include any tribal funding, access to grants and other funding sources that are restricted to tribes is an asset that is unique to the partnerships that founded this project and should not be overlooked.

**Table 6: Initial Development Phase Estimated Costs** (table developed by Ecology)

Amount in Millions (blank cells denote "0" funding or request)					Appropriated State Funding				Requested State Funding Requests	Federal & Other Sources of Funding	
Integrated Plan Elements	Projects	Projected Funding Requests from all Sources 2013-2023	Anticipated Federal & Other Share 2013-2023	Anticipated State Share 2013-2023	2013-2015	2015-2017	2017-2019	2019-2021	2021-2023	2014 - 2020	2021-2023 <sup>a</sup>
<b>Habitat</b>	Teanaway Forest Acquisition	99.3		99.3	99.3						
	Teanaway Forest Planning & Operations (non-Ecology)	7.2		7.2	1.0	0.5	1.5	2.3	1.9		
	Kittitas County impacts offset for Teanaway Forest	10.0	5.0	5.0	5.0						5.0
	Other State Land Acquisitions <sup>b</sup>	14.0	8.2	5.8	5.8					8.2	0.0
	NRCS RCPP - Yakama Nation Projects	22.6	22.6							10.0	12.6
	NRCS EQIP	20.5	20.5							5.0	15.5
	NMFS Pacific Coastal Salmon Recover Fund	20.4	20.4							8.4	12.0
	USACOE levee reconfigure., setback & removal	13.2	13.2							6.4	6.8
	BPA NPCC Fish and Wildlife Program	94.3	94.3							94.3	0.0
	Tributary/Mainstem Habitat Restoration Projects	39.0	19.4	19.6	2.4	2.5	5.4	4.3	5.0	2.0	17.4
	Bull Trout Enhancement	13.6	6.8	6.8		1.7	1.7	1.7	1.7		6.8
	Federal, Tribal, Local Habitat Actions & Land Acquisitions <sup>c</sup>	20.3	20.0	0.3		0.3				20.0	0.0
<b>Fish Passage</b>	Cle Elum Dam	154.1	85.2	68.9	8.8	9.0	9.0	20.1	22.0	56.0	29.2
	Tieton Dam	23.9	22.0	1.9	0.6	0.5		0.8			22.0
	Clear Lake Dam passage	6.4	3.2	3.2			1.5	1.0	0.7	1.5	1.7
	Box Canyon Creek	TBD	TBD	TBD							TBD
	USFWS National Fish Passage Program funds	0.8	0.8							0.8	0.0
<b>Structural &amp; Operational Modifications</b>	Keechelus to Kachess Conveyance Project	5.7	1.0	4.7	0.5	4.2		0.0	0.0	1.0	0.0
	Cle Elum Dam/Pool Raise	26.0	13.4	12.6	2.8	1.0	3.0	3.3	2.5	6.0	7.4
	Roza Power Subordination <sup>d</sup>	0.2	0.0	0.2	0.2						

	Chandler Power Subordination <sup>d</sup>	TBD	TBD	TBD							TBD
	Misc. Structural projects, Nelson Dam, Lower River, YTID, KRD	3.5	1.5	2.0					2.0	0.4	1.1
	Upper Yakima System Storage	4.5	2.5	2.0				2.0		0.8	1.7
<b>Surface Storage</b>	Kachess Drought Relief Pumping Plant (KDRPP) <sup>e</sup>	236.2	218.6	17.6	12.6	4.3	0.7			5.4	213.2
	Wymer Dam and Reservoir	10.0	2.5	7.5	0.5		3.0	3.5	0.5		2.5
	Bumping Reservoir Enlargement	1.5	0.5	1.0	0.5				0.5		0.5
<b>Groundwater Storage</b>	Regional Storage Options	7.0	2.8	4.2	0.2	0.5	1.1	0.6	1.8	0.7	2.1
	Municipal ASR Projects	0.4	0.2	0.2	0.2						0.2
<b>Water Conservation</b>	Agricultural Conservation Projects	83.1	61.5	21.6	2.4	4.8	5.0	4.5	4.9	61.5	0.0
	Municipal/Domestic Conservation Programs	1.2	0.6	0.6	0.1	0.2	0.1	0.1	0.1	0.1	0.5
	BIA WIP improvements	10.6	10.6							10.6	0.0
<b>Market Driven Water Reallocation</b>	General support for markets and banking	3.1	1.2	1.9	0.4	0.5	0.6	0.1	0.3	0.2	1.0
<b>Total</b>		<b>952.6</b>	<b>658.5</b>	<b>294.1</b>	<b>143.3</b>	<b>30.0</b>	<b>32.6</b>	<b>44.3</b>	<b>43.9</b>	<b>299.3</b>	<b>359.2</b>
<b>Percentage Share</b>		<b>100%</b>	<b>69.1%</b>	<b>30.9%</b>	<b>15.0%</b>	<b>3.1%</b>	<b>3.4%</b>	<b>4.7%</b>	<b>4.6%</b>	<b>31.4%</b>	<b>37.7%</b>

Notes:

(1) RCW 90.38.120 - Legislative Intent - Cost to implement integrated plan states: (1)(a) It is the intent of the legislature for the state to pay its fair share of the cost to implement the integrated plan. At least one-half of the total costs to finance the implementation of the integrated plan must be funded through federal, private, and other nonstate sources, including a significant contribution of funding from local project beneficiaries. This section applies to the total costs of the integrated plan and not to individual projects within the plan.

(2) RCW 90.38.120 - Legislative Intent - Cost to implement integrated plan states: (1)(b) The state's continuing support for the integrated plan shall be formally reevaluated independently by the governor and the legislature if, after December 31, 2021, and periodically thereafter, the actual funding provided through nonstate sources is less than one-half of all costs and if funding from local project beneficiaries does not comprise a significant portion of the nonstate sources.

(3) The projects and specific costs are subject to change or modification as new information becomes available over the course of the 35-year implementation schedule of the Yakima Integrated Plan. The state and non-state cost share is yet to be defined. This estimate is guided by the projected state support provided over the next three biennia. If non-state funding was increased during this time, the required state funding might need to be increased to conform to RCW 90.38 and in conformance with agreed upon cost-share methodology. The estimates provided in this projection illustrates a possible state and non-state cost share approach and may not be consistent with other published cost estimates for the overall integrated plan.

(4) Costs do not include inflation. They are listed in dollars from the most recent study available (typically 2012 to 2015 dollars) and are subject to change as new information becomes available through additional feasibility and design studies and/or changes by the Yakima Integrated Plan Workgroup.

(a) The funding estimate for 2016-2023 federal and other sources is projected to be equivalent to the anticipated state share of funding for the 2013-2023 timeframe. The specific amount dedicated to each project is yet to be determined for the federal and other sources of funding.

(b) Includes Tieton Cattle Co./North Fork Cowiche Creek; and Heart of the Cascades/Manastash Block.

(c) Funded by LWCF in 2014 and 2015. Includes acquisitions in Naches watershed; Cabin Creek, Log/Thetis Creek. Some of these went beyond "primary" YBIP goals.

(d) Funding for power subordination costs and KRD canal modification costs are listed as TBD due to insufficient information to reasonably cost-out. Inclusion of costs for these three items will increase the total state and non-state share of overall funding.

(e) Includes funds spent by Roza ID on Kachess Emergency Floating Pumping Plant - cost assumes floating plant alternative.

## Conclusion

As of 2020, the Integrated Plan is seven years into its first development phase. This phase is known as the Initial Development Phase (IDP) and spans from 2013-2029. Current IDP cost estimates are approximately \$952.6 million, with the state expected to contribute approximately \$294.1 million (31 percent). The \$4.1 billion cost estimate for the full 35-year buildout of the Integrated Plan remains unchanged since 2013. From 2013-2021, \$250.2 million of appropriated state funds has been combined with \$229.3 million of federal and other funding for a total of \$479.5 million that have supported a variety of Integrated Plan projects throughout all of the seven elements. Funding provided for the acquisition of the Teanaway Community Forest (TCF) is the highest one-time cost over the past seven years at \$99.3 million.

Current investments (\$479.5 million) in the Integrated Plan are lower than the originally projected costs (\$630 million<sup>14</sup>) for the first seven years due to a couple notable factors. First, original projections included overlapping reservoir fish passage projects at the major Reclamation dams. However, due to limited project resources, the initiation of the second reservoir fish passage project, Tieton Dam Fish Passage, is planned to begin after the current Cle Elum Reservoir Fish Passage has finished the construction phase. Additionally, high dollar projects, such as the Keechelus to Kachess Conveyance Project, have been temporarily put on hold and/or pushed out to later development phases. After further project and environmental analyses in the KDRPP-KKC tier 1 FEIS, the preferred alternative to meet the Integrated Plan's goal of providing more sustainable water supply during prorationing years did not include Keechelus to Kachess Conveyance Project at this time. As the Integrated Plan moves forward over the next few years and begins early feasibility of adding new large surface water storage projects, it is anticipated that the accompanying funding requests in later biennia will need to increase to accommodate these larger, more expensive construction projects. Similarly as these projects begin feasibility, conversations will start about how the beneficiaries will contribute to the cost of these projects.

The Integrated Plan needs a flexible funding strategy that can adjust for shifting costs and project timelines throughout the entire three-phase buildout of the Integrated Plan. With that in mind, Western Washington University helped develop the enclosed funding model as a tool to adjust projected costs for the Integrated Plan. Highlighted by the four modeling scenarios (High-State, Mid-State, Low-State, and Custom) presented in previous sections of this report, funding projections can be shifted in response to changing project priorities, timelines, and costs throughout the three phases of the Integrated Plan based on the needs of the Integrated Plan as a whole. While this flexible-funding approach is beneficial in many ways, the lack of detail can complicate future funding projections.

The total estimated costs of \$4.1 billion for implementing the full Integrated Plan has remained constant since YBIP launched in 2013. These projected total costs of the Integrated Plan are too high to depend on a single funding source. In order to succeed, the Integrated Plan needs to rely on a combination of funding sources from federal, state, and local sources. The Office of Columbia River, Bureau of Reclamation, the Yakama Nation, and the numerous other Integrated Plan partners must continue to embrace innovative partnerships and engage stakeholders to develop funding strategies and achieve the balanced and comprehensive goals of the Integrated Plan.

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<sup>14</sup> Original IDP total projected cost of \$897 million equates to \$89.7 million per year times 7 years.

# Appendix A - Members of the Yakima River Basin Water Enhancement Plan Workgroup

<b>American Rivers</b>	Wendy McDermott
<b>Benton County Commission</b>	Jerome Delvin
<b>Kennewick Irrigation District</b>	Seth Defoe
<b>Kittitas County Commission</b>	Cory Wright
<b>Kittitas Reclamation District</b>	Urban Eberhart
<b>National Marine Fisheries Service</b>	Dale Bambrick
<b>Roza Irrigation District</b>	Scott Revell
<b>Sunnyside Valley Irrigation District</b>	Ron Cowin
<b>Trout Unlimited</b>	Lisa Pelly and Peter Dykstra
<b>US Army Corps of Engineers</b>	Bret Walters
<b>US Bureau of Reclamation</b>	Talmadge Oxford
<b>US Fish and Wildlife Service</b>	Jason Romine
<b>US Forest Service</b>	Erick Walker
<b>WA Department of Agriculture</b>	Jaclyn Hancock
<b>WA Department of Ecology</b>	Tom Tebb
<b>WA Department of Fish and Wildlife</b>	Mike Livingston and Jeff Tayer
<b>WA Department of Natural Resources</b>	Larry Leach
<b>Yakama Nation</b>	Phil Rigdon and Joe Blodgett
<b>Yakima Basin Fish &amp; Wildlife Recovery Board</b>	Alex Conley
<b>Yakima Basin Storage Alliance</b>	Sid Morrison
<b>City of Yakima</b>	Dave Brown
<b>Yakima County Commission</b>	Ron Anderson
<b>Yakima-Tieton Irrigation District</b>	Rick Dieker

# Appendix B: State Funding

## State Capital Budget Funding

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State funding for the Yakima Basin Improvement Plan would likely come as a capital budget appropriation for the various projects. The Capital budget is largely funded through the issuance of General Obligation (GO) Bonds. GO Bonds are debt backed by the full faith, credit, and taxing power of the state. This program is structured in a conservative way. They are issued with a 25-year maturity and level debt service payments over the life of the bonds. Approximately 65% of the state budget has come from bonds over the last four biennia. Any appropriation for the Integrated Plan from the capital budget would effectively be a grant, and is defined as such throughout the report.

Using 2019 General State Revenue of \$22 billion and an addition of \$42 billion in bonds (35-65% ratio), we get a total annual budget of \$64 billion. Carrying this forward, the Integrated Plan would be expected to cost the state (on average) a maximum of 0.118%-0.129% of a \$64 billion budget over the final two phases of the integrated plan.

## Boards

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The Recreation and Conservation Office (RCO) is a state agency that manages a variety grant programs to create outdoor recreation opportunities, protect the State's wildlife, habitat, and farmland, and to help return salmon from near extinction. RCO supports numerous funding programs through the Recreation and Conservation Funding Board (RCFB) and the Salmon Recovery Funding Board (SRFB). RCFB funds can be used for a variety of projects including the construction of parks, trails, ball fields, and boating facilities to the conservation and restoration of wildlife habitat. Specific grant programs administered by the RCFB include Aquatic Lands Enhancement Account, the Land and Water Conservation Fund, and the Washington Wildlife and Recreation Program.

## Grant programs

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Centennial Clean Water Program is funded by state dollars, provided primarily via the State Building Construction Account. The Centennial program provides grants for water quality infrastructure and nonpoint source pollution projects to improve and protect water quality.

Floodplains by Designs is a collaborative partnership integrating flood risk reduction with habitat protection and restoration. The hallmark of Floodplains by Design is that the supported projects are built from the ground up by local project proponents and community stakeholders.

## Appendix C: Federal Funding

Due to changing administrations, agency programs with limited timeframes, and political pressures, most available funding sources are not known more than a few years out. Despite this uncertainty, there are generally three main areas where some federal funding may be available for Integrated Plan projects: appropriating funds from the federal budget through the Bureau of Reclamation, applying for federal grants, or exploring federal debt financing.

In [Table 7](#), federal funding for Integrated Plan, YRBWEP, and related projects from 2011-2018 are presented to illustrate past or existing funding sources.

### Appropriations from federal budgets

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The U.S. Bureau of Reclamation's partnership in the Integrated Plan (which is still referred to as the third phase of the Yakima River Basin Water Enhancement Project or YRBWEP at the federal level) projects allows it to request funds directly from the federal government as part of its annual budget. From 2011 to 2020, funding from Reclamation has averaged \$15 million annually with a low of \$9.3 million in 2014 and a high of \$23.8 million in 2017 and 2019.<sup>15</sup>

### Grants

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Grants are highly uncertain across a variety of metrics. Certain grant programs may expire in the coming years and new grant programs may become available, thus making long term suggestions impossible. The grant process also leads to uncertainty with respect to what, if any, funding will be granted to the project. Integrated Plan projects are well positioned to receive grant funding, but the amount of funding that will be received over the life of the project and in individual years cannot be concretely forecasted.

### Debt financing

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In terms of federal debt financing, the EPA's Water Infrastructure Finance and Innovation Program (WIFIA) provides loans for non-federal water projects. The minimum project size ranges from \$5 million for small communities (<25 thousand people) to \$20 million for larger communities (>25 thousand people).<sup>16</sup> The loans cannot cover more than 50% of project costs and cannot be used on projects that are more than 80% federally funded. These loans are enticing because loan fees are generally equal to or slightly greater than the Treasury rate with a similar maturity. The maximum maturity period is 35 years from the point of substantial project completion, with up to 5 years of deferment. Without a specific revenue stream, it is unlikely that debt financing on behalf of the Integrated Plan will be a feasible funding source.

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<sup>15</sup> Yakima Basin Integrated Plan. "Robust Agriculture and Abundant Salmon." *YBIP*, January 2019, <https://fortress.wa.gov/ecy/ezshare/ocr/YBIP/Outreach/YBIPprimer.pdf>

<sup>16</sup> "What is WIFIA?" *U.S. Environmental Protection Agency*, 5 February 2020, <https://www.epa.gov/wifia/what-wifia>

**Table 7: Federal YBIP/YRBWEP Funding (\$millions) 2011-2018**

Agency	Program	Years Received	Average Annual Funding	Lowest Annual Funding	Highest Annual Funding	Total Funding
<b>Reclamation</b>	Yakima River Basin Water Enhancement Project (includes YRBWEP-II projects)	2011-2018	\$14.9	\$9.3 (2014)	\$23.8 (2017)	\$119.5
<b>Bonneville Power Administration</b>	Northwest Power and Conservation Council Fish and Wildlife Program	2011-2018	\$20.0	\$17.6 (2014)	\$22.7 (2011)	\$160.0
<b>US Forest Service</b>	Land and Water Conservation Fund	2011-2018	\$4.9	\$0.8 (2011)	\$5.0 (2018)	\$39.3
<b>NOAA Fisheries</b>	Pacific Coastal Salmon Recovery Fund	2011-2018	\$1.2	\$1.2	\$1.2	\$9.6
<b>Department of Ag, Natural Resources Conservation Service</b>	Regional Conservation Partnership Program	2015-2018	\$1.3	\$0.1 (2015)	\$1.9 (2016)	\$5.3
	Environmental Quality Incentives Program	2011-2016	\$1.5	\$0.8 (2013)	\$2.6 (2016)	\$9.1
<b>Bureau of Indian Affairs</b>	Lining and Piping Wapato Irrigation Project	2012-2018	\$1.2	\$0.2 (2014)	\$2.8 (2017)	\$8.7
<b>US Fish and Wildlife</b>	Partners for Fish and Wildlife, National Fish Passage Program	2011-2018	\$0.2	\$0.06 (2015)	\$0.3 (2017)	\$1.3
<b>US Army Corps of Engineers</b>	Flood Plain Restoration	2012-2018	\$1.2	\$0.04 (2017)	\$6.6 (2012)	\$8.3

Source: Yakima Basin Integrated Plan (January 2019). "Robust Agriculture & Abundant Salmon."

<https://fortress.wa.gov/ecy/ezshare/ocr/YBIP/Outreach/YBIPprimer.pdf>

## Appendix D: Local Funding

### Property tax levies

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Local funding sources as included in the model are limited to county funds. The most feasible funding stream is a property tax option, involving Benton, Kittitas, and Yakima Counties. Property taxation is set at the county level and based on the assessed value of all parcels within that tax district. The levy rate is expressed as a dollar-amount of income per 1,000 of taxable property. While the property value is an aspect of this funding source, the legal limit on taxation caps the growth of income from the property tax levy at 1%, meaning that the real income is a projection of last year's levy collection.

Due to this rule, the real levy rate has been and often declines in a region unless a voter-passed levy lid lift is passed. While this does require a 60-% voter majority to pass and implement, this offers a large possibility for funding, which could compose of over 30% of the total costs if raised to the maximum level of 1.8. However, since this is unlikely to pass the public vote, the model assumes much smaller increases in the property tax levy.

Upon the levy lid lift, the rate would be applied to the real assessed value for the region, meaning that the assessed value for each of the three counties needed to be projected to calculate the revenue from a lid lift. To maintain an achievable and conservative estimate of income, property values were increased by the median historic growth rates – which were slightly lower than the averages and used to maintain a conservative approach – for each county for the last 15 years.

The model assumes that the property tax lid lift would occur at the beginning of each phase, resulting in lid lifts in 2023 and 2033. The difference between the projected standard county revenue from property taxes and the revenue generated from the new lid lift is the assumed revenue for the Integrated Plan.

## Appendix E: Other Funding

Other funding sources include a wide variety of possibilities for partnership funding and grants. Some projects may be fully funded from these sources, while others may receive no partnership funding at all. Because of the unpredictable nature of this funding source, the model does not forecast future revenues from other funding based on economic context, but rather relies on historic performance to forecast a reasonable outcome. In the Initial Phase of the Integrated Plan, other funding ranged from 0-50% of the total income. However, since this is such a highly variable revenue stream, the fixed model scenarios remain conservative and never exceed 20% for other funding. The custom scenario tool in the model does allow for higher percentages to be tested, but users should exercise caution when using this tool.

### Scenario 1: High-state funding

	Middle Development Phase FY 2029 - 2038 (July '29 - June '39)	Final Development Phase FY 2039 - 2048 (July '39 - June '49)
<b>Costs</b>		
Habitat/Watershed Protection and Enhancement	\$53,050,000	\$53,050,000
Reservoir Fish Passage	\$244,800,000	\$100,000,000
Surface Water Storage	\$986,425,000	\$982,425,000
Groundwater Storage - Regional and Municipal	\$57,900,000	\$57,900,000
Structural and Operational Changes	\$143,100,000	\$143,100,000
Enhanced Water Conservation	\$167,300,000	\$167,300,000
Market Reallocation	\$475,000	\$475,000
Integrated Plan Update Costs	\$1,500,000	\$1,500,000
<b>Total</b>	<b>\$1,654,550,000</b>	<b>\$1,505,750,000</b>
<b>Funding - Income</b>		
County Funding	\$ -	\$ -
State Funding	\$827,275,000	\$752,875,000
Other Funding	\$ -	\$ -
Federal Funding	\$827,275,000	\$752,875,000
Local and Other Total	\$ -	\$ -
<b>Total</b>	<b>\$1,654,550,000</b>	<b>\$1,505,750,000</b>

## Scenario 2: Mid-state funding

Costs	Middle Development Phase	Final Development Phase
	FY 2029 - 2038 (July '29 - June '39)	FY 2039 - 2048 (July '39 - June '49)
Habitat/Watershed Protection and Enhancement	\$53,050,000	\$53,050,000
Reservoir Fish Passage	\$244,800,000	\$100,000,000
Surface Water Storage	\$986,425,000	\$982,425,000
Groundwater Storage - Regional and Municipal	\$57,900,000	\$57,900,000
Structural and Operational Changes	\$143,100,000	\$143,100,000
Enhanced Water Conservation	\$167,300,000	\$167,300,000
Market Reallocation	\$475,000	\$475,000
Integrated Plan Update Costs	\$1,500,000	\$1,500,000
<b>Total</b>	<b>\$1,654,550,000</b>	<b>\$1,505,750,000</b>
<b>Funding - Income</b>		
County Funding	\$248,276,736	\$218,971,812
State Funding	\$579,092,500	\$527,012,500
Other Funding	\$330,910,000	\$297,320,000
Federal Funding	\$496,365,000	\$445,980,000
Local and Other Total	\$579,186,736	\$527,078,058
<b>Total</b>	<b>\$1,654,644,236*</b>	<b>\$1,505,815,558*</b>

\*Due to the level of specificity attainable with a tri-county levy lid lift, small changes compound over the 10-year period and do not allow for a perfect funding scenario. For this reason, the model is currently set up to result in a slight overfunding of less than \$100,000 in each phase.

### Scenario 3: Low-state funding

Costs	Middle Development Phase	Final Development Phase
	FY 2029 - 2038 (July '29 - June '39)	FY 2039 - 2048 (July '39 - June '49)
Habitat/Watershed Protection and Enhancement	\$53,050,000	\$53,050,000
Reservoir Fish Passage	\$244,800,000	\$100,000,000
Surface Water Storage	\$986,425,000	\$982,425,000
Groundwater Storage - Regional and Municipal	\$57,900,000	\$57,900,000
Structural and Operational Changes	\$143,100,000	\$143,100,000
Enhanced Water Conservation	\$167,300,000	\$167,300,000
Market Reallocation	\$475,000	\$475,000
Integrated Plan Update Costs	\$1,500,000	\$1,500,000
<b>Total</b>	<b>\$1,654,550,000</b>	<b>\$1,505,750,000</b>
<b>Funding – Income</b>		
County Funding	\$132,412,510	\$120,504,949
State Funding	\$281,273,500	\$255,977,500
Other Funding	\$165,455,000	\$150,575,000
Federal Funding	\$1,075,457,500	\$978,737,500
Local and Other Total	\$297,867,510	\$271,079,949
<b>Total</b>	<b>\$1,654,598,510*</b>	<b>\$1,505,794,949*</b>

\*Due to the level of specificity attainable with a tri-county levy lid lift, small changes compound over the 10-year period and do not allow for a perfect funding scenario. For this reason, the model is currently set up to result in a slight overfunding of less than \$100,000 in each phase.

## Appendix F: Custom Scenario Tool Visual

<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #4F81BD; color: white;">Schedule (Non-operable in this version)</th> </tr> </thead> <tbody> <tr> <td>Standard (2049)</td> <td style="text-align: center;"><input checked="" type="radio"/></td> </tr> <tr> <td>Repayment 1 (2059)</td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>Repayment 2 (2069)</td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>Repayment 3 (2079)</td> <td style="text-align: center;"><input type="radio"/></td> </tr> </tbody> </table>	Schedule (Non-operable in this version)		Standard (2049)	<input checked="" type="radio"/>	Repayment 1 (2059)	<input type="radio"/>	Repayment 2 (2069)	<input type="radio"/>	Repayment 3 (2079)	<input type="radio"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #4F81BD; color: white;">Funding Scenarios</th> </tr> </thead> <tbody> <tr> <td>High-State</td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>Mid-State</td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>Low-State</td> <td style="text-align: center;"><input checked="" type="radio"/></td> </tr> <tr> <td>Custom</td> <td style="text-align: center;"><input type="radio"/></td> </tr> </tbody> </table>	Funding Scenarios		High-State	<input type="radio"/>	Mid-State	<input type="radio"/>	Low-State	<input checked="" type="radio"/>	Custom	<input type="radio"/>																																																				
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