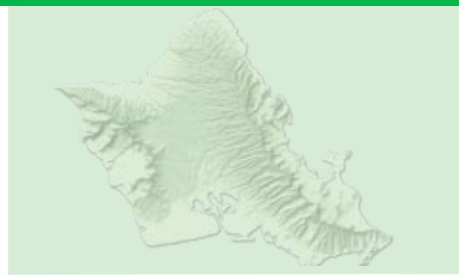
Oahu Regional Transportation Plan 2035



Oahu Metropolitan
Planning Organization

Approved by the Policy Committee of the Oahu Metropolitan Planning Organization in April 2011

Mobilizing Oahu | Fulfilling Our Legacy

TABLE OF CONTENTS

What is the ORTP?

The ORTP 2035 is Oahu's Regional Transportation Plan (ORTP) that will guide the development of transportation on our island through the year 2035. It presents both a vision of an improved transportation system to serve the needs of Oahu's population as well as specific projects that will achieve that vision.

ORTP 2035 includes recommendations for improving the full range of transportation options available to island residents—automobile, truck, bus, rail, bicycle, and pedestrian.

In order to determine the locations of future transportation needs, ORTP 2035 is based on an analysis of population and employment growth trends and forecasts that extend 25 years into the future and updated at least every five years.

Why is ORTP 2035 important?

Transportation is a vital aspect of daily life, as it directly enables and supports economic activity, job creation and retention, community development, and recreation. Effective management of the transportation system requires a careful balance of quality of life, efficient land use, environmental stewardship, security, and other issues. Because transportation investments are often costly, long-term capital expenses that take years to plan, design, and build, it is important that the identified improvements work together to achieve the best overall transportation solution reflective of Oahu's values and priorities.

In addition to cost, changes in demographics will have an impact on Oahu's transportation system. Hawaii is seeing a dramatic growth in its elderly population (65 years of age or older). That group is expected to be nearly 400,000

people by the year 2035, or 25 percent of the state's population. As the population ages, older drivers and pedestrians are faced with declining cognitive skills, such as memory, selective attention, response time, and difficulties processing speed. While the senior population has the fewest licensed drivers, per capita, and drives fewer miles per capita, they have a higher likelihood of injury or fatality from an accident than all other age groups. Many elderly drivers continue to depend on the automobile for meeting their transportation needs. These two facts, combined with the physical limits associated with aging, will require agencies to pay more attention to the design and function of island transportation systems.

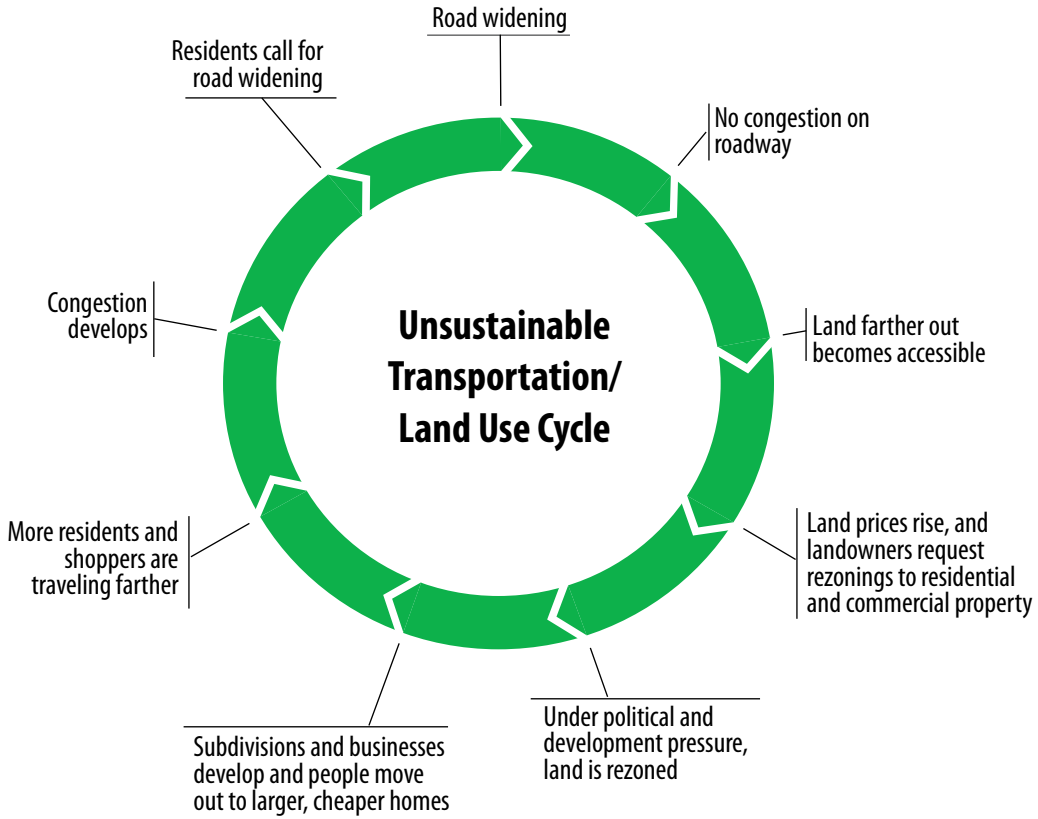


Figure 1 *Transportation/Land Use Cycle*

What makes this ORTP different?

ORTP 2035 is the first to recognize the impact of the transportation/land use cycle shown in Figure 1, a cycle that has been repeated many times on Oahu and throughout the U.S. For years transportation professionals have been vainly trying to get ahead of the curve, but the reality is that we cannot build our way out of congestion, and that the best way to achieve mobility and accessibility is through providing more transportation choices.

ORTP 2035 is also the first to address concerns related to sustainability and climate change. These two issues are tightly intertwined. Increasing the sustainability of the transportation system by increasing efficiency of operations and reducing greenhouse gases may slow the progression of climate change.

Existing Conditions

Oahu is a study in contrasts, ranging from the highly developed Honolulu and Waikiki areas to the still largely rural areas of the North Shore and Waianae Coast. While the mountainous terrain adds to the island's natural beauty, it also restricts the development of a truly connected roadway network. There are very few roadways that cross the Waianae or Koolau Mountains, making trips from coastal areas to the central plain difficult and lengthy.

Existing Transportation Facilities and Services

Oahu has an extensive network of roadways ranging from freeways to local streets and a growing number of bicycle and pedestrian facilities. The City and County of Honolulu also has a bus (TheBus) and paratransit system (TheHandi-Van) operated by Oahu Transit Services. TheBus system currently consists of 100 fixed routes that serve approximately 3,800 bus stops and carries approximately 73 million passengers each year. However, as shown in Table 1, most trips are made in automobiles, and the transportation network has historically been oriented to moving cars and trucks.

Table 1 *Transportation Fast Facts*

Miles of Interstate freeways	54.9
Miles of State highways	280.4
Miles of City and County roads	1,308.4
Number of automobiles and trucks	695,400
Number of bus routes	100
Number of buses	540
Number of park-and-ride facilities	5
Miles of bikeways	98
Percentage of trips made by automobile	84
Percentage of trips made by transit	5
Percentage of trips made by bicycle or walking	11

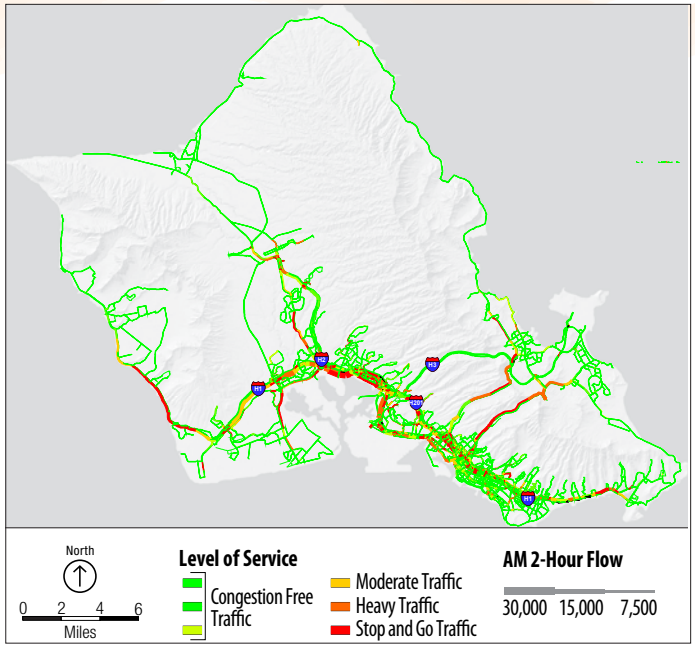


Figure 2 *Roadway Levels of Service (2007)*

As shown in Figure 2, Oahu's freeway network is highly congested during the morning commute (i.e., orange or red color). The Hawaii Department of Transportation (HDOT) has employed many strategies to decrease congestion and improve traffic flow. It has developed miles of contraflow lanes (lanes that reverse directions to improve management of directional driving) and high-occupancy vehicle (HOV) lanes (Interstate or highway lanes designated for exclusive use by buses, carpools, motorcycles, and vanpools). HOV lanes are intended to serve as incentives for people to carpool, vanpool, or ride public transit. Despite these initiatives, Oahu's reliance on single-occupant automobiles for transportation has resulted in long commutes.

Demographics and Congestion

In 2007, Oahu had 905,600 residents, 311,000 households, and 556,900 employees. Seventy-one percent of the island's jobs were located in the Primary Urban Center (PUC), and only 46 percent of the island's population was located in the PUC. As shown in Figure 3, this concentration of employment opportunities in the PUC combined with a population dispersed

Figure 3 *Primary Urban Center*

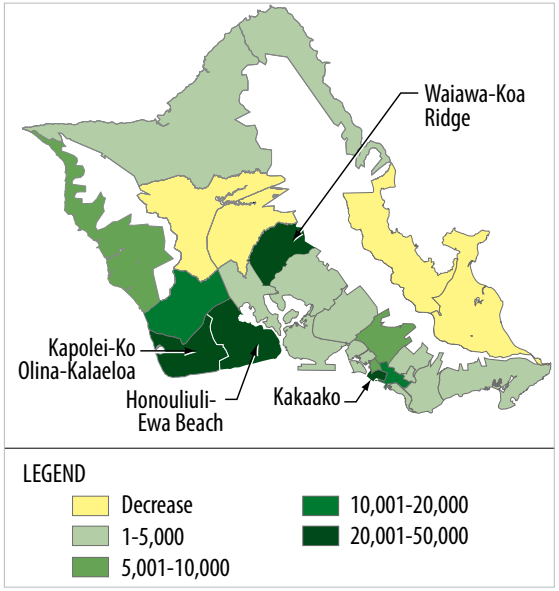


Figure 4 *Population Growth 2007 to 2035*

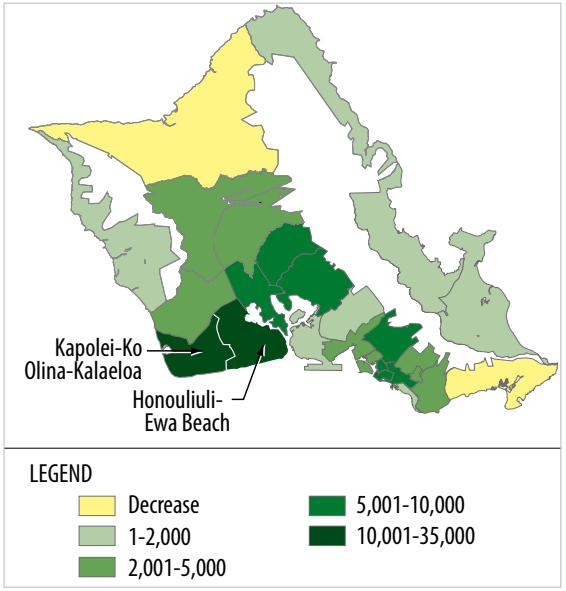


Figure 5 *Employment Growth, 2007-2035*

throughout the island has resulted in some of the longest commute times in the nation.

Challenges Facing Oahu

System Preservation

Regional transportation projects and programs have historically been funded by Federal, State, and City and County revenues, with the addition of some private sources. All of these revenue sources have declined in recent years due to the economic downturn and more fuel efficient vehicles yielding lower gasoline tax revenue, resulting in insufficient State and City funding for the maintenance of existing facilities. These maintenance needs are exacerbated by previously deferred maintenance on many facilities. ORTP 2035 addresses this issue by allocating over 50 percent of the available funds to safety and operational improvements and maintenance of existing facilities.

High Growth Areas

Today, much of Oahu's development lies along the southern portion of the island, generally comprising the H-1 travel corridor. In the future, however, the growth in population and households will be broadening to the west side of the island and the Central Oahu urban fringe areas. This will provide more opportunities for people to live and work in close proximity and eventually reduce congestion. As shown in Figure 4, the Kapolei-Ko Olina-Kalaeloa, Honouliuli-Ewa Beach, Waiawa-Koa Ridge, and Kakaako areas will see the largest increase in population by 2035.

By 2035, employment is projected to grow by 25 percent. Although job growth is expected throughout the island, the most robust growth is shown in the Kapolei-Ko Olina-Kalaeloa and the Honouliuli-Ewa Beach areas (Figure 5). The PUC is still expected to have 64 percent of all jobs on the island, followed by Ewa/Kapolei with 17 percent. This growth in jobs

in Ewa/Kapolei may take many work trips away from the PUC and Oahu's most congested roadways or may re-orient travel patterns somewhat between the PUC and these outlying areas.

ORTP 2035 addresses the proposed growth in Kapolei and the PUC through strategic investments in multi-modal facilities and equipment to offer residents and visitors more transportation choices.

Increasing Congestion and Longer Travel Times

Transportation planners analyzed traffic conditions projected until 2035, assuming the construction of the initial phase of the Honolulu High-Capacity Transit Corridor Project (HHCTCP) from East Kapolei to Ala Moana Center. The results of this analysis showed continued worsening of the already congested conditions found along the H-1 corridor, the H-1 and H-2 merge, and in transit reliability. As shown in Figure 6, travel time to Downtown will get longer, with the longest travel time forecast to be from 120 to 160 minutes. While the rail project does relieve some congestion on its own, rail alone will not be able to keep Oahu's transportation "statistics," such as drive time and level-of-service, from getting worse. Specific problems identified by the analysis of the 2035 roadway network include the following:

- The "reverse" commute along the H-1 corridor will take more time.
- More than 26 percent of freeways, expressways, and ramps will operate under congested conditions in 2035, compared to 23 percent in 2007.
- H-1 between the Middle Street merge and University Avenue will continue to be congested in both directions.
- Increased development and roadway congestion will inhibit bus transit.
- Traffic on H-2 and Kamehameha Highway will get significantly worse without alternative roadways to provide access to-and-from the Waiawa-Koa Ridge area.
- The planned growth in the Ewa/Kapolei area will require significant investment in transportation infrastructure.

Safety

Unsafe driver behavior and unsafe roads were identified by Oahu's residents in the public outreach conducted for the ORTP 2035. Specific areas of concern include aggressive driving, impaired driving, safety of bicyclists and pedestrians, motorcycles, and mopeds,

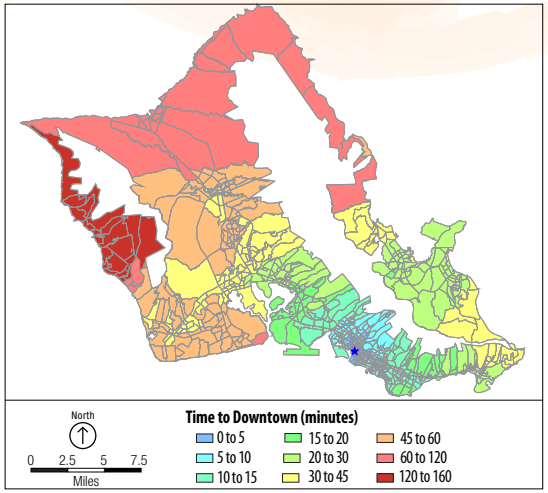


Figure 6 *2035 AM Commute Times to Downtown (Baseline)*

Reconstruction of Kinau Street Off-ramp from H-1

and reducing traffic-related deaths and injuries. Many of the projects included in ORTP 2035 address the issue of safety directly or indirectly by measures such as improved lighting and signing, as well as general widening and improved roadway configurations.

Access to Transportation System

Because Oahu's population is a majority of minorities, OahuMPO developed a unique environmental justice methodology to determine the Title VI/Environmental Justice (T6/EJ) population. The OahuMPO process considers the nature and status of minority groups in the region based on three factors: (1) its numerical minority status, (2) its share of the region's aggregate household income compared against its share of the region's total households, and (3), its settlement pattern compared to all other groups. The result of this analysis is the identification of 78 census block groups as environmental justice areas: 70 based on the disproportionate presence of federally-defined minority groups, nine based on low-income characteristics, and eight block groups were both disproportionately low income and minority. Table 2 shows the income and household size characteristics that must be met to be considered low income.

In order to comply with Title VI, OahuMPO must ensure that ORTP 2035 does not result in disproportionately high and adverse human health or environmental effects to T6/EJ populations, and that everyone has access to the transportation system. According to survey data, a relatively high proportion of T6/EJ residents (31 percent) use TheBus for daily commuting, compared to just 8 percent of the overall Oahu sample, indicating the need for a balanced, multi-modal system.

Table 2 *Hawaii Title VI/Environmental Justice Population*

Number in Household	Annual Household Income
One	$12,500
Two	$16,800
Three	$21,100
Four	$25,400
Five	$29,700
Six	$34,000
Seven	$38,300
Eight	$42,600

ORTP 2035 evaluates the issue of equitable mobility and accessibility for T6/EJ populations through two performance measures. Mobility is defined as the ease of movement of goods, services, and people. Accessibility is defined as the relative ease of reaching important destinations such as hospitals, employment centers, colleges, and regional shopping centers. Both are usually measured in travel time via bus and automobile.

Climate Change

Due to its island nature, the impacts of climate change on Oahu could be significant, most especially the increased storm severity, including flooding, tidal surges, high winds, and their impacts on transportation infrastructure as well as the predicted rise in sea level. ORTP 2035 is the first of Oahu's regional transportation plans to consider the effects of climate change and develop objectives related to the reduction of greenhouse gases. Long-term planning is needed to identify and minimize risk to transportation facilities that are in close proximity to coastal areas and other areas prone to flooding historically, such as Honolulu Harbor and Kalaeloa Barbers Point Harbor, Honolulu International Airport, and various mountain and valley roadways. Oahu's coastal highways—Farrington Highway, Kalanianaole Highway, Kamehameha Highway—and Nimitz Highway are of concern.

Energy Conservation

As an island, Oahu must import just about everything necessary for daily life—including fossil fuels that run the transportation system. Reducing our reliance on fossil fuels and

developing a more sustainable transportation system are challenges being addressed for the first time in ORTP 2035. According to statistics of the Hawaii Clean Energy Initiative and Oahu's Department of Planning and Permitting, the challenge is daunting:

- Imported oil supplies 90 percent of our energy.
- More than 60 percent of our energy is used for transportation.
- We are the most oil-dependent state in the nation.
- Only 3 percent of Oahu's vehicles are hybrid or electric.

Improving on these statistics is a goal of ORTP 2035.

Opportunities

Local Development Plans

Sustainable development is generally defined as development that will not require the use of resources reserved for future generations for today's needs. Each of Oahu's eight development plan areas has either a Development or Sustainable Communities Plan that is administered by the City's Department of Planning and Permitting. Together with the General Plan, the Development and Sustainable Communities Plans guide population and land use growth over 20 years or more.

Ewa/Kapolei and the PUC are the only planning areas identified for future growth and development in their Development Plans. Kapolei will emerge as a secondary urban center over the next 20 years. It will have sufficient housing, commercial, recreation, and employment options to make it less likely its residents will have to travel far to meet their daily needs. The Development Plan for the PUC includes continued investments in residential choice and business development, ensuring that this area will continue to attract residents, businesses, and visitors.

The Sustainable Communities Plans for the rest of the island's communities—Central Oahu, East Honolulu, Ewa, Koolaupoko, Koolauloa, North Shore, and Waianae—emphasize the protection of agricultural and preservation areas, support of small-town values, and maintenance of a land-use pattern that reflects the traditional Hawaiian land division system. These areas of emphasis serve as tools for physical and resource planning; protecting and preserving significant natural, scenic, cultural, historical, and agricultural resources; expanding public access to mountain and shoreline areas; and encouraging the accommodation of

Magic Island area of Ala Moana Beach Park

TheBus

TheHandi-Van

changing demographics. Connecting land-use planning with transportation planning is vital to the success of both. Existing Development and Sustainable Communities Plans were used to validate growth areas and identify potential transportation projects for ORTP 2035.

Sustainable Transportation Solutions

What is a sustainable transportation system?

A comprehensive definition of a sustainable transportation system developed by the Canadian Center for Sustainable Transportation states that sustainable transportation:

- "Allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations;
- "Is affordable, operates efficiently, offers choice of transport mode, and supports a vibrant economy; and
- "Limits emissions and waste within the planet's ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise."

ORTP 2035 furthers many of these principles of sustainable transportation with its emphasis on accessibility through transportation choices—bicycle and pedestrian facilities, mass transit, vanpool and shuttle programs, and high technology projects. ORTP 2035 assumes that HHCTCP will be operating between East Kapolei and Ala Moana Center by the year 2035 and that TheBus transit route system will be restructured to integrate with rail. Providing non-automobile transportation alternatives between Kapolei and Ewa to Downtown Honolulu and the Ala Moana Shopping Center promotes accessibility, reduces congestion and air pollution, and supports the economy. By supporting the continued development of bike routes and lanes and the purchase of additional buses, vans, and shuttles, ORTP 2035 provides more affordable transportation choices that minimize energy consumption and promote healthy lifestyles.

Complete Streets

A Complete Street is one that provides for a safe, comfortable, and convenient trip for all types of users, including motorists, pedestrians and bicyclists, transit riders, and freight. Oahu's complete streets policy serves as an important guide for transportation system designs by improving safety through the provision of adequate sidewalks, bike lanes, and crosswalks among other roadway improvements.

Act 54 of 2009 established a Complete Streets policy in Hawaii. Under the Complete Streets law, a statewide task force will review existing State and County highway design standards and guidelines and propose changes to procedures and design manuals. ORTP 2035 supports this

concept by including bicycle and pedestrian improvements as well as roadway designs that reflect Complete Street concepts.

State Safety Plan
The Hawaii Department of Transportation's *Strategic Highway Safety Plan* (SHSP) recognizes the need to reduce the number of traffic-related deaths on Hawaii's roadways regardless of the cause. Challenges such as aggressive driving, impaired driving, facility design, and data and safety management are some of the issues covered in the SHSP. Addressing these challenges involves the participation of a wide range of stakeholders from various agencies across the State. Strategies to improve safety include legislation and funding, educational and community actions, enforcement, and improved engineering.

ORTP 2035 includes goals and performance measures related to safety and allocates funds to develop a safer, multi-modal transportation system. Included in ORTP 2035 are projects to implement safer facilities, such as repairing and preserving roadways, installing guardrails, providing rockfall protection measures, and separating traffic from pedestrians and bicyclists through roadway and intersection improvements.

Energy Sustainability Task Forces and Forums
Addressing the challenge of moving away from fossil-fuel dependency to a more sustainable transportation system is addressed in several recently completed reports for Honolulu and Hawaii. The Mayor's Energy and Sustainability Task Force developed a 10-year energy efficiency and sustainability plan, the goals of which are to make Oahu infrastructure and operations more self-sufficient and sustainable and more in harmony with the environment. Another report is *Strategies for Energy Efficiencies in Transportation* completed by the Hawaii Energy Policy Forum. For this report, surveys were conducted to gain public perspective on several aspects of possible energy-efficient transportation options. The results of these surveys were used to develop recommendations such as using cleaner vehicles with higher efficiencies or implementing more smart growth principles, including higher density to support additional transit.

According to the Hawaii Clean Energy Initiative (HCEI), more than 60 percent of Hawaii's current energy use is for transportation, and more than half of that is for aviation. Currently, the HCEI goal is to use clean energy to supply 70 percent of Hawaii's needs. Partners and working groups are actively monitoring developments in clean energy options, and viable solutions will be incorporated into the initiative's overall goals as they become available.

ORTP 2035, for the first time, addresses sustainability issues facing Oahu. ORTP 2035 includes goals and performance measures related to sustainability and allocates funds to develop a more sustainable, multi-modal system. Included in the ORTP 2035 are pedestrian and bicycle facilities, improved bus and transit connections and facilities, and maintenance and operational upgrades to improve the quality of life for the communities of Oahu.

Vision and Goals

ORTP 2035 is developed in layers, beginning with one broad, over-arching vision that leads to increasingly specific steps that will carry us toward that vision.

ORTP 2035 Vision

In 2035, Oahu will be a place where we will have efficient, well-maintained, safe, secure, convenient, appropriate, and economical choices in getting from place to place. Our transportation system will move us and the goods we use in a manner that supports the island's high quality of life, natural beauty, economic vitality, and land use policies by supporting appropriate density development and avoiding urban sprawl. This

Bicycle rider and pedestrian

system will promote energy conservation and economic sustainability as well as the protection of our ports of entry, preparation for emergency situations, and changes in global climate patterns.

Goals

Transportation Facilities

Provide an inclusive, multi-modal transport system whose connectedness provides efficient means for users desiring to move about this island by bicycle, freight carrier, pedestrian facility, road, transit service, and intermodal connectors.

We will achieve this goal by investing in bikeways, walkways, transit service, freight movement, and the necessary facilities to ensure smooth connections between them.

Transportation Operations and Services

Develop, operate, and maintain Oahu's island-wide transportation system to ensure the efficient, dependable, safe, secure, convenient, and economical movement of people and goods.

We will achieve this goal by promoting ridesharing and transit ridership, designing facilities and services for the disabled, encouraging public-private partnerships to provide transportation services and facilities, reducing congestion through investment in real-time travel information and other intelligent transportation system solutions, and using contra-flow and HOV lanes.

Natural Environment

Develop, operate, and maintain Oahu's transportation system in a manner that sustains environmental quality.

We will meet this goal by preserving and improving Oahu's cultural, natural, and scenic resources; meeting or exceeding Federal, State, and City noise, air, and water quality standards; and designing transportation facilities that maximize energy conservation and reduce greenhouse gas emissions in order to protect the natural environment from significant damage or disruption due to climate change.

Human Environment and Quality of Life

Develop, operate, and maintain Oahu's transportation system in a manner that supports community-wide values related to health, safety, and civil rights.

We will achieve this goal by developing transportation facilities that meet or exceed local urban design standards, that encourage the use of renewable energy sources for transportation by providing equal access to all users of Oahu's transportation system and services, and

HOV lane on H-1

by minimizing disruption to existing neighborhoods from construction and maintenance of the transportation system.

Land Use and Transportation Integration
Develop, operate, and maintain Oahu's transportation system in a manner that integrates effective land use and transportation with established sources of funding in a fair and equitable manner.

We will achieve this goal by adhering to the planned population distribution and land-use development policies expressed in the City's General, Development, and Sustainable Communities Plans, and other adopted plans, and by supporting land-use development policies, such as transit-oriented development, that capitalize on the efficient use of the transportation system and reduce the amount of time spent commuting and number of vehicle miles driven.

Public Input

The OahuMPO has a robust public outreach program, which includes regular consultation with several committees as well as outreach through its website and social media. OahuMPO built upon this strong foundation and conducted an extensive public outreach program to involve stakeholders in the development of the ORTP 2035. A synopsis of the outreach program is shown in Table 3. This outreach occurred in two phases and included stakeholder interviews, focus groups, telephone and web-based surveys, and public meetings. As a result of this outreach, a wide spectrum of Oahu's commuters, agency representatives, business owners, residents, retirees, students, and those traditionally underserved in the planning process played a role in the direction and content of the ORTP 2035.

The Kaiwi Coast

Guide dogs assist blind travelers in all aspects of mobility

Table 3 *ORTP 2035 Key Stakeholder Outreach Tools*

Stakeholder Groups	Outreach Tools
OahuMPO committees	Citizen Advisory Committee; Technical Advisory Committee; Policy Committee
Under-served populations; active elderly, emergency managers; emergency first responders, environmental justice advocates	Focus groups
Commercial users; large land owners, building developers; businesses, civic, community, and business groups; schools	Stakeholder interviews
Citizens-at-large	Telephone surveys Public meetings Web-based surveys Social media Email

OahuMPO Committees

OahuMPO has three standing committees—Citizen Advisory Committee (CAC), Technical Advisory Committee (TAC), and Policy Committee. The CAC is the foundation of OahuMPO's public involvement process. The CAC is a group of volunteers representing community organizations, professional associations, neighborhood boards, and members of the private sector. They participate in monthly meetings to discuss current and ongoing transportation issues for Oahu.

The CAC provided significant input on and shaped the development of the *ORTP 2035 Public Outreach Plan* before adoption and has been regularly briefed and provided with feedback on results from the public outreach efforts.

The TAC consists of transportation, land-use planning, and environmental professionals who review technical data informing the plan and resulting from the analyses.

The Policy Committee determines the direction of the OahuMPO planning effort, considers and approves transportation planning issues, and makes the final approval for OahuMPO matters.

The Policy Committee is made up of 13 members from State and City governments.

Meetings of the CAC, the TAC, and the Policy Committee are open to the public, and public testimony is accepted on agenda items.

Stage 1 Outreach

The first phase of outreach for ORTP 2035 was conducted to obtain a reading of the "pulse" of the community on transportation-related issues.

Focus Groups and Stakeholder Interviews

The findings from focus groups and stakeholder interviews are qualitative, not quantitative, in nature. The focus groups and stakeholder interviews were designed to explore how these corporate and agency representatives felt about certain transportation options rather than determining how many think in specific ways. Therefore, the findings were not intended to be projected onto a larger population but were used to understand more fully the underlying concerns about proposed transportation options among a small and specific cross-section of Oahu transportation users.

The top priorities in transportation identified by stakeholder interviewees and focus group participants are shown in Table 4.

Telephone Survey

In the first islandwide telephone survey of 600 Oahu residents, their priorities clearly reflected use of the H-1 Freeway as the primary east-west transportation corridor linking Oahu's key residential and job centers. As shown in Figure 7, when assessing new transportation projects, improving the H-1 corridor was identified as the highest priority by 56 percent of respondents.

Residents are generally not satisfied with the condition of Oahu's road system. As shown in Figure 8, 69 percent rate their satisfaction a '6' or lower on the 10-point scale. On Oahu, a "6" is considered a low ranking.

When asked to identify key challenges, traffic congestion was identified as the most pressing, followed by unsafe driver behavior (Figure 9).

The key transportation corridor identified for further investment was the H-1. The key challenge is traffic congestion. The condition of Oahu's roadway network was rated poorly; and road maintenance was identified as the most effective solution by 57 percent of Oahu's residents.

Stage 2 Outreach

The second phase of outreach was conducted to obtain reactions from Oahu residents to proposed road improvement projects, secondary access projects, safety improvements, and Transportation Demand Management (TDM) strategies and to ascertain residents' top priorities in each category.

Stage two activities included the following:

- Stakeholder interviews
- Focus groups
- Islandwide telephone survey
- Regional meetings
- Web-based survey

Focus Groups and Stakeholder Interviews

The second round of interviews helped to frame the issues and develop more specific questions to be used in the second islandwide telephone survey. The interviews focused more on developing and refining plan scenarios, including roadway and safety improvements and TDM strategies. Table 5 summarizes the findings from these interviews and focus groups.

Table 4 *Top Three Priorities*

Focus Groups	Top Three Priorities
Stakeholder interviewees	1. Congestion mitigation 2. Road maintenance 3. Safety/security
T6/EJ service providers	1. Improve mass transit system 2. Bus scheduling 3. Safety at bus stops
Emergency managers	1. Disaster infrastructure 2. Provide alternate routes 3. Control traffic flow
Emergency first responders	1. Clear the bottlenecks 2. Improve ability to maneuver through traffic 3. Reduce the use of shoulders as traffic lanes

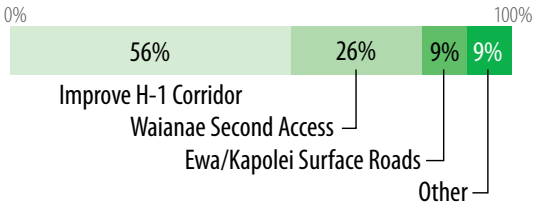


Figure 7 *Priority Road Projects*

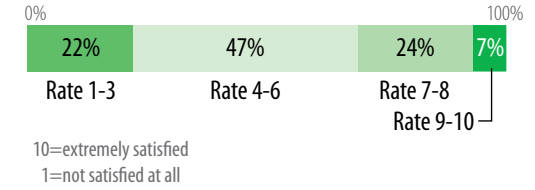


Figure 8 *Satisfaction with Oahu's Road Network*

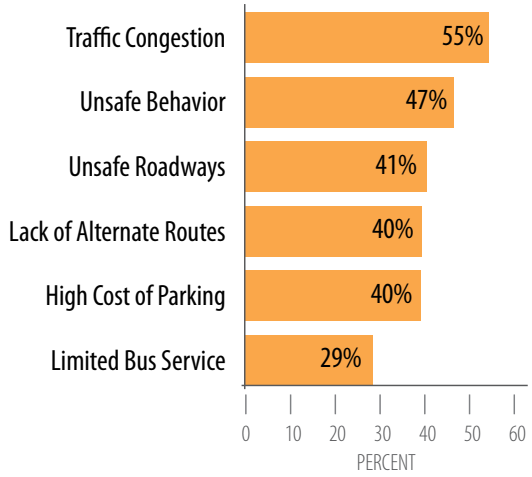


Figure 9 *Key Challenges*

Table 5 *Key Findings of Stakeholder Interviews*

Priorities	Key Findings
Road widening priority	• H-1 Waiau to Waiawa • Best option to improve congestion in West Oahu
Second access projects	• Waianae second access • Strong need for emergency access
Kapolei road projects	• Farrington Highway widening • Would benefit greatest number of users
Solutions to safety issues	• Design safer roadways • Highway design is a better means of controlling driver behavior
Final suggestions	• Overall most support for H-1 urban corridor improvements • Effective planning is needed to coordinate existing transportation networks with the rail network

Telephone Survey

The second telephone survey to 1,000 Oahu residents included a subset of 400 T6/EJ populations. Respondents were asked to rate nine transportation priorities, including roadway expansion projects, rail/transit expansion projects, and operations and maintenance projects. The results are shown in Figure 10.

According to the survey, 31 percent of the T6/EJ sample used TheBus for commuting, compared to only 8 percent of the overall Oahu sample. Their resultant priorities reflect this difference in mode use. Among the T6/EJ population, "Expand TheBus" was rated as the highest priority, while the overall population rated "maintenance" as the highest priority. However, it should be noted that both samples identified the same top four priorities, albeit in different order.

> *"Explore alternative transportation options and include the use of land use planning that incorporates mixed use so driving is not as critical."*
>
> Citizen Comment

Regional Meetings

During the summer of 2010, three regional meetings were held in Kapolei, Mililani, and

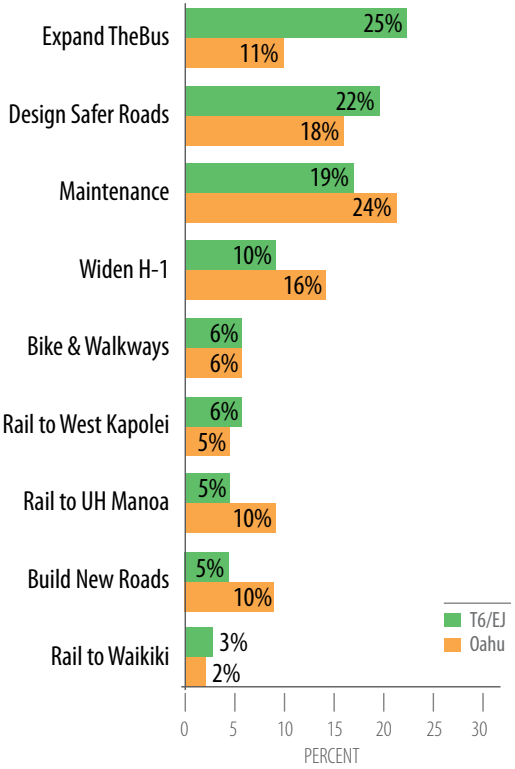


Figure 10 *Transportation Priorities Title VI/Environmental Justice versus Oahu Residents*

Downtown Honolulu to present the candidate projects to Oahu's citizens. The meeting format was a composite of a presentation and an open house. The meetings provided a forum to gather the public's input about potential projects and programs to be considered for inclusion in the

ORTP 2035. A web-based survey was also used to obtain comments from the public. Altogether, 240 evaluation forms were received.

> *"The on- and off-ramp system of the freeways is a major contributor to traffic. People have come up with ideas to improve that and the State ought to listen. There are too many choke points. They need to widen H-1."*
>
> Citizen Comment

The results of this online survey reflected opinions of residents on potential congestion mitigation, safety, and operations and maintenance programs or projects. Overall, the safety, operations and maintenance, and multi-modal projects received far more support than the road-oriented congestion-mitigation projects. The only road-oriented congestion-mitigation projects receiving more than 100 "important" and "very important" rankings were "Widen H-1 from Vineyard Boulevard to Middle Street," and "Widen H-1 from Ward Avenue to Punahou Street." Meanwhile, extending the Honolulu rail transit line, improving TheBus service and facilities, providing bike and pedestrian facilities, and maintaining the existing roads and bridges consistently received between 150 and 200 positive rankings.

Public Outreach Summary

Overall, the results of the public outreach activities were remarkably consistent over time. Traffic congestion, road maintenance, and safety (both of the transportation facilities and driving behavior) came up repeatedly as the key challenges across many forums. Of all the road improvement projects identified, investing in the H-1 corridor was seen as the priority. The transportation needs of the T6/EJ population, as first identified by the service providers in the focus groups and then by themselves in telephone surveys, were also consistent. Improvements to TheBus system and other mass transit options consistently ranked as their priorities.

The one anomaly in the results was the support expressed for bicycle and pedestrian improvements in the online survey. When telephone survey respondents were asked to prioritize competing kinds of investments, the bike and pedestrian categories did not fare well compared to congestion mitigation, safer road design, and improvements to TheBus network. However, as shown in Table 6, those who filled out the online survey were more likely to bike/walk, use TheBus, and carpool than the overall Oahu population.

Making Choices

ORTP 2035

Project Selection Process

The OahuMPO followed a deliberate process to identify and select transportation projects and programs for inclusion in the financially constrained ORTP 2035. Projects and programs included in the final plan were evaluated for consistency with the following:

- Public input
- The overall mission and goals of the ORTP 2035
- How well they address areas with forecasted high growth in population and employment
- How well they address problems and deficiencies on the island's regional transportation system
- Technical merits

Potential projects and programs for the ORTP were identified through the review of the existing State and City plans and performance reports, including, but not limited to, the ORTP 2030, *State Highway Safety Plan, HHCTCP Final Environmental Impact Statement, 2050 Sustainability Plan, Oahu Development and Sustainable Communities Plans, OahuMPO Congestion Management Process Report*, and the

Table 6 *Mode of Travel to Work or School Online Survey Respondents*

Travel Mode	Number of Responses	% of Responses
Drive alone	160	43
Bike/walk	79	21
TheBus	67	18
Carpool	50	13
Motorcycle	15	5

FFYs 2008–2011 and *FFYs 2011–2014 Transportation Improvement Programs.*

Candidate projects and programs were evaluated and comparative data were presented to the public at the regional meetings. This combination of analysis and public input resulted in the comprehensive package of projects and programs selected for the ORTP 2035. Technical analyses and public feedback indicated that congestion mitigation projects should be focused along the H-1 corridor and in the Ewa/Kapolei communities. There was also strong support from the public for maintaining and preserving the multi-modal options in the existing transportation system and continuing investments in public transit, as well as pedestrian and bicycle facilities and services.

Paying for the Plan

The ORTP 2035 is a fiscally-constrained plan focused along the H-1 corridor and in the Ewa/Kapolei communities that ensures projected costs fall within anticipated revenues. The Federal portion consists of highway funds from the Federal Highway Administration (FHWA) and transit funds from the Federal Transit Administration (FTA). The Highway Special Fund and the State Capital Improvement Program (CIP) represent the State's portion. The State liquid fuel tax, registration fees, motor vehicle weight tax, and car rental/tour vehicles tax make up the Highway Special Fund revenue. The City and County revenue sources vary from the City General Fund to County fuel tax as well as public utility franchise taxes. The Hawaii General Excise and Use Tax (GET) surcharge will be the primary local funding source of the HHCTCP. Transit fares help to cover some of the cost of the transit system. Developer and private funding is also a revenue source for certain State and City projects.

The revenue forecasts and their underlying assumptions were approved by the Policy Committee on October 21, 2009. During its deliberations, there were several key uncertainties that were acknowledged, including the following:

- The transportation funding authorization known as SAFETEA-LU expired on September 30, 2009, and Federal funding has been provided by means of Continuing Resolutions since that date. Until Congress acts on a new authorization, long-term capital planning is compromised since future long-term revenues are unknown.
- The Federal Highway Trust Fund is nearly bankrupt, and it is not known when this condition will improve.
- The significant economic downturn that began in 2007 has had considerable impact on revenue streams that fund transportation infrastructure by both the State and City.
- The American Recovery and Reinvestment Act of 2009 (ARRA) resulted in approximately $46 million for transportation-related expenditures on Oahu during FYs 2009–2010. Whether further ARRA-type stimulus funding will be provided by Congress in the future is not clear.

Since the fall of 2009, an additional $700 million in revenue from developer and private funding has been identified by the City, for a total of $1.3 billion for funding transportation projects in the ORTP 2035. The revenues proposed for City and State projects reflect the analyses undertaken for the City's *Draft Ewa*

Impact Fees for Traffic and Roadway Improvement Update Study.

As a result, the revenue forecasts that underlie the ORTP 2035 are conservative and were based on data received from Federal, State, and City transportation officials. It is estimated that approximately $26.1 billion in revenues will be available for ORTP 2035 projects and programs; all amounts are expressed in Year-of-Expenditure (YOE) dollars.

ORTP 2035 Plan

Overview

The ORTP 2035 is a financially-constrained plan that provides more than $26 billion for transportation facilities and services. The projects contained in the ORTP 2035 attempt to balance budget realities with the need for transportation options and accessibility, congestion mitigation, safety and alternative access routes, and facilities for bicyclists and pedestrians.

Capital Projects

Congestion Mitigation

Congestion-mitigation projects include adding lanes so that more vehicles can ride the same section of road and reconfiguring interchanges for smoother traffic flow. Because transportation using a personal vehicle will continue to be an important travel mode in the future, roadway capacity will need to be increased. The H-1 corridor has been identified as a priority corridor for congestion mitigation; additional congestion-mitigation projects will be concentrated in the rapidly developing Ewa/Kapolei areas to enable them to handle future growth.

Sustainable Transportation

Sustainable transportation options include projects and programs that provide transportation choices and increase the efficiency of the existing transportation network.

TheBus and TheHandi-Van are Oahu's existing forms of public transportation—TheBus serves the population islandwide, and TheHandi-Van provides service for qualified persons with disabilities who are unable to use TheBus. Improvements in both service and facilities are included in the Plan.

The HHCTCP is a key component of the ORTP 2035. This elevated, fixed-guideway system will serve the H-1 corridor and provide a reliable alternative to personal vehicle use. The guideway will connect the major employment and residential areas of Kapolei and Ewa to Downtown Honolulu and the Ala Moana Shopping Center. Part of this project will also involve redirecting some bus services to act as feeder bus routes serving the fixed-guideway stations to reduce redundancy in transit routes.

Crosswalk on Alakea Street

Bicycle and pedestrian facilities promote the most sustainable form of transportation available—people power—as well as provide healthy lifestyle choices. ORTP 2035 includes projects that increase and enhance Oahu's existing network of bicycle and pedestrian facilities so that they function as key components of the overall transportation system.

High technology projects improve traffic flow through traffic monitoring technologies such as Intelligent Transportation Systems (ITS) and Travel Demand Management (TDM).

Bicycles and pedestrians

ITS can include benefits to highways, transit services, commercial vehicle operators, and emergency assistance providers. ITS projects in ORTP 2035 involve developing, installing, and managing closed-circuit television cameras and associated systems to monitor traffic conditions, and establishing an islandwide traffic management center.

Mobility management projects consist of measures that are designed to reduce demand and increase the efficiency of the transportation system, usually through managed lanes, park-and-ride lots, and carpools and vanpools. Examples of such projects include the development of an afternoon contraflow lane that would operate on H-1 in the Ewa direction from Radford Drive to the Waikele Interchange, as well as vanpool and shuttle programs.

Operations, Maintenance, System Preservation, and Safety

Throughout the public outreach process, dissatisfaction with the current condition of Oahu's transportation facilities and increased maintenance were identified as top priorities for funding. Consequently, ORTP 2035 has allocated over $13 billion, or 56 percent of the overall budget, to support the operations, maintenance, preservation, and safety of the existing transportation system. Included in this broad category are projects and programs such as installing guardrails and other safety features, highway and transit maintenance, and projects to improve traffic flow and safety. Maintenance and preservation are typically more cost-effective than building new facilities because they leverage previous investments made to the system.

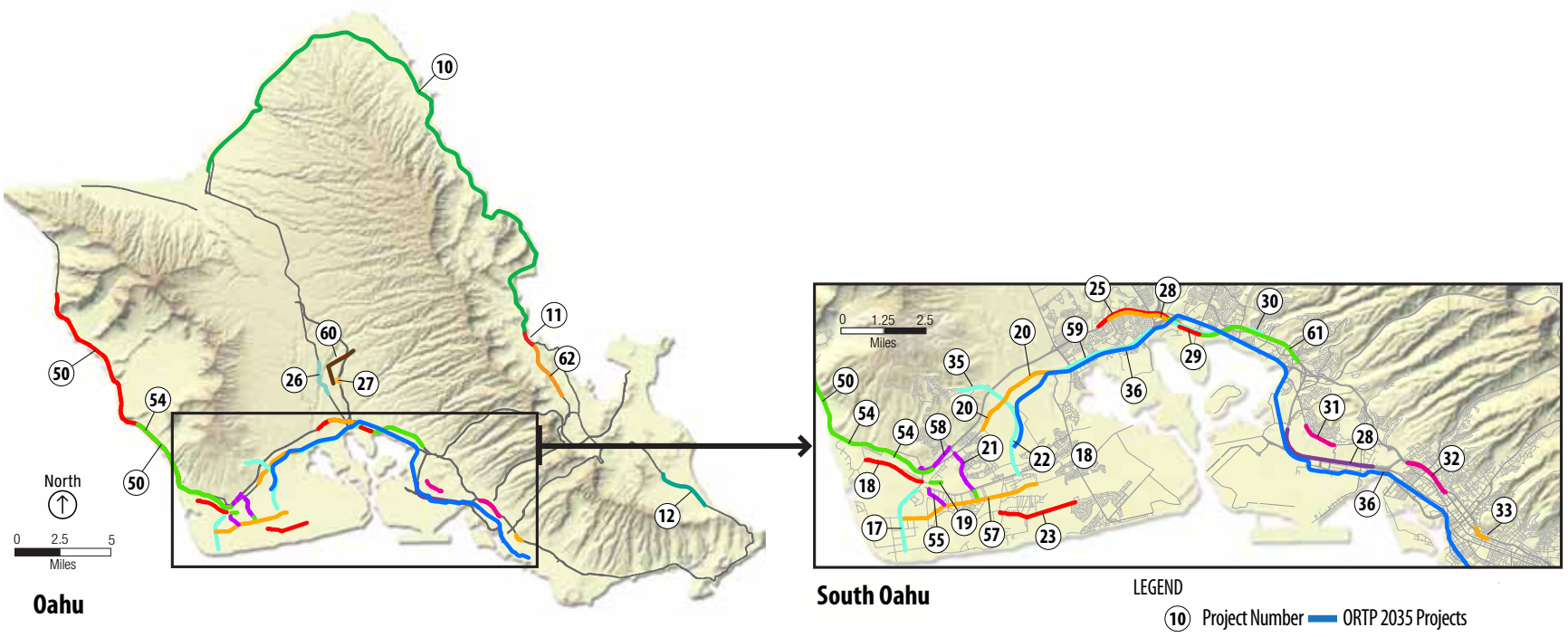
Mid- and Long-Range Plans

The projects in ORTP 2035 are prioritized in a "mid-range plan," anticipated to be developed over the next decade, and a "long-range plan," proposed for implementation during the final 15 years of the plan. Projects were placed within each time period based on anticipated funding and the following guidelines:

H-1 Freeway

- Projects in FFY 2011–2014 TIP are included in the mid-range plan.
- Basic elements of projects in the Ewa/Kapolei area are in the mid-range plan.

ORTP 2035 Projects



Note: Table 8 has the complete list of ORTP 2035 Projects. The map only shows projects with specific locations. Investments that are islandwide or programmatic are not mapped.

Figure 11 *ORTP 2035 Project Location Map*

Table 7 *Oahu Regional Transportation Plan 2035 Project List (continued on next page)*

	Project No.	City/ State	Facility/Project Title	Project Description	Estimated Cost in $M ($YOE)
Mid-Range Projects—2011 to 2020	**Islandwide Projects—2011 to 2020**				
	1	S	*Bike Plan Hawaii*—Oahu	Implement Oahu elements of the State of Hawaii's *Bike Plan Hawaii* (2003).	* $40.0
	2	C/S	Enhancement Projects	Implement enhancement projects, including, but not limited to, projects from the Transportation Enhancement Program for Oahu.	* $8.7
	3	C	Human Services Transportation Coordination Program	Provide a range of transportation services targeted to disadvantaged populations under the Human Services Transportation Coordination Program.	$16.5
	4	C/S	Intelligent Transportation Systems (ITS)	Implement ITS projects including, but not limited to, those identified in the Oahu Regional ITS Architecture.	$50.8
	5	C	Joint Traffic Management Center	Construct a transportation management center behind the Alapai Transit Center will combine transportation management with City, State, and emergency response agencies.	$68.9
	6	C	Oahu Bike Plan	Implement City And County Bike Projects.	* $22.5
	7	S	Transportation Demand Management (TDM) Program	Develop an aggressive TDM program that could include, but is not limited to: 1. Free real-time online carpool matching, 2. Outreach promotion and marketing of alternative transportation, 3. Emergency ride home program, 4. Major special events, 5. Employer-based commuter programs, 6. Emerging and innovative strategies (e.g., car sharing).	$10.0
	8	S	Vanpool Program	Continue implementation and expansion of the State's Vanpool Hawaii program.	$26.1
	Safety And Operational Improvement Projects—2011 to 2020				
	9	S	Highway Safety Improvement Program	Comprehensive program to fund safety improvements to reduce collisions and damage to property. Strategies may include installation of left-turn lanes, roadway widenings, traffic signal modifications, installation of rumble strips and crash attenuators, installation of guardrails and bridge railings, and others.	* $27.4
	10	S	Kamehameha Highway, Safety Improvements, Haleiwa to Kahaluu	Construct safety improvements along Kamehameha Highway, from Haleiwa to Kahaluu. Safety improvements include turn lanes, guardrails, signage, crosswalks, etc. to improve safety. Widening of Kamehameha Highway will only be in areas where needed for storage/turn lanes safety improvements.	$49.5
	11	S	Kamehameha Highway, Safety and Operational Improvements, Kaalaea Stream to Hygienic Store	Construct safety and operational improvements along Kamehameha Highway, between Kaalaea Stream and Hygienic Store. Safety and operational improvements include passing and turning lanes, modification of signals, and installation of signs, flashers, and other warning devices. This project also includes replacement of Kaalaea Stream Bridge and Haiamoa Stream Bridge with structures that meet current design standards.	* $17.0
	12	S	Kalanianaole Highway, Safety and Operational Improvements, Olomana Golf Course to Waimanalo Beach Park	Construct safety and operational improvements along Kalanianaole Highway between the Olomana Golf Course and Waimanalo Beach Park. Specific safety and operational improvements include construction of turning lanes, sidewalks, wheelchair ramps, bike paths or bike lanes, traffic signal upgrades, utility relocation, and drainage improvements.	* $41.0
	13	S	Rockfall Protection, Various Locations	Install rockfall protection or mitigation measures along various State highways at various locations.	$50.0
	14	S	Shoreline Protection Program	Protect shoreline along Kamehameha Highway and other locations.	$20.0
	Congestion Mitigation Projects—2011 to 2020				
	15	S	Interstate Route H-1, New Interchange, Kapolei Interchange	**Construct new Interstate Route H-1 Kapolei Interchange for Kapolei between the Palailai Interchange and Makakilo Interchange. Project to be constructed in multiple phases.**	$47.7

* Projects that are included in or are consistent with the City's or State's bicycle plans.

Table 7 *Oahu Regional Transportation Plan 2035 Project List (continued from previous page)*

	Project No.	City/ State	Facility/Project Title	Project Description		Estimated Cost in $M ($YOE)
Mid-Range Projects—2011 to 2020	16	S	Hanua Street Extension, Farrington Highway to Malakole Street; Interstate Route H-1, New On- and Off-Ramps, Palailai Interchange	Hanua Street: • Extend Hanua Street from Malakole Street to Farrington Highway. This new four-lane roadway will provide access to Kalaeloa Harbor. Interstate Route H-1, Palailai Interchange: • Construct new on- and off-ramps at Interstate Route H-1 Palailai Interchange to Hanua Street extension.		$120.0
	17	C	Kalaeloa Boulevard, Reconstruction and Widening; Lauwiliwili Street to Olai Street	Improve and reconstruct Kalaeloa Boulevard between Lauwiliwili Street and Olai Street.		$30.0
	18	C	Kapolei Parkway, Extension and Widening, Aliinui Drive to Kalaeloa Boulevard	New four-lane roadway extension of Kapolei Parkway between Aliinui Drive and Hanua Street and the widening of the existing parkway from four to six lanes between Hanua Street and Kalaeloa Boulevard.		$44.1
	19	C	Kapolei Parkway, Extension, Kamokila Boulevard to Kamaaha Avenue	Complete the extension of the existing four-lane Kapolei Parkway.	*	$13.3
	20	C	Farrington Highway, Widening, Golf Course Road to West of Fort Weaver Road	Widen Farrington Highway from two to four lanes, from Golf Course Road to just west of Fort Weaver Road.	*	$33.0
	21	S	Fort Barrette Road, Widening, Farrington Highway to Barbers Point Gate	Widen Fort Barrette Road from two to four lanes from Farrington Highway to Barbers Point Gate.	*	$23.5
	22	S	Kualakai Parkway, Widening and Extension, Interstate Route H-1 to Franklin D Roosevelt Avenue	Widen Kualakai Parkway from three to six lanes from Interstate Route H-1 to Kapolei Parkway. Extend Kualakai Parkway by six lanes from Kapolei Parkway to Franklin D. Roosevelt Avenue.	*	$200.0
	23	S	Keoneula Boulevard, Extension, Kapolei Parkway to Franklin D. Roosevelt Avenue	Extend Keoneula Boulevard from Kapolei Parkway to Franklin D. Roosevelt Avenue.		$209.5
	24	S	Interstate Route H-1, Widening, Waipahu Off-Ramp	Widen the Interstate Route H-1 Waipahu Street off-ramp from one to two lanes, in the westbound direction, at the Waiawa Interchange.		$28.8
	25	S	Interstate Route H-1, Widening, Waiawa Interchange	Widen the Interstate Route H-1 by one lane, in each direction, through the Waiawa Interchange. This project will begin in the vicinity of the Waiawa Interchange and end at the Paiwa Interchange.		$16.2
	26	S	Kamehameha Highway, Widening, Lanikuhana Avenue to Ka Uka Boulevard	Widen Kamehameha Highway from a three-lane to a four-lane divided facility between Lanikuhana Avenue and Ka Uka Boulevard. This project includes shoulders for bicycles and disabled vehicles, bridge crossing replacement, bikeways, etc.		$130.0
	27	S	Interstate Route H-2, Widening, Waipio Interchange	Widen both on- and off-ramps on Interstate Route H-2, at the Waipio Interchange. This project includes the widening of the Ka Uka Boulevard overpass and intersection improvements to facilitate movement to and from the on- and off-ramps.		$30.6
	28	S	Interstate Route H-1, Contra-flow Lane Extension (PM), Waiawa Interchange to Kunia Interchange and Keehi Interchange to Radford Drive	This project would construct an extension of the PM contra-flow lane on the Interstate Route H-1, in the westbound direction, on the west end from Waiawa Interchange to Kunia Interchange and on the east end from the Keehi Interchange to Radford Drive.		$165.0

* Projects that are included in or are consistent with the City's or State's bicycle plans

Table 7 *Oahu Regional Transportation Plan 2035 Project List (continued from previous page)*

	Project No.	City/ State	Facility/Project Title	Project Description	Estimated Cost in $M ($YOE)
Mid-Range Projects—2011 to 2020	29	S	Interstate Route H-1, Pearl City and Waimalu Viaduct Improvements, Phase 2	Replace, repair, and/or strengthen the Pearl City and Waimalu Viaduct concrete deck and other structural components, including guardrails. Project will be implemented in five phases.	$100.0
	30	S	Interstate Route H-1, Waiau Interchange to Halawa Interchange, Widening, Eastbound	Widen the H-1 Freeway to six lanes from the Waiau Interchange to the Halawa Interchange in the eastbound direction, and restore the current freeway lane width and shoulder standards. Project may be phased due to high cost.	$100.0
	31	C	Salt Lake Boulevard Widening Project	Widen Salt Lake Boulevard from two to six lanes, between Maluna Street and Ala Lilikoi Street.	* $66.0
	32	S	Interstate Route H-1, Widening, Ola Lane to Vineyard Boulevard	Widen the Interstate Route H-1 by one lane, in the eastbound direction, from Ola Lane to Vineyard Boulevard, as identified below: • From two to three lanes from Ola Lane/Middle Street to Likelike Highway off-ramp • From three to four lanes from Likelike Highway off-ramp to Vineyard Boulevard This project also includes the widening of: • Gulick Avenue overpass to allow five lanes to pass under it • Kalihi Interchange overcrossings to allow four lanes to pass under it.	$104.0
	33	S	Interstate Route H-1, Operational Improvements, Lunalilo Street Off-Ramp and On-Ramp (Between Lunalilo Street On-Ramp and Vineyard Boulevard Off-Ramp)	Improve operation and capacity on the westbound H-1 Freeway by modifying weaving movements between the Lunalilo Street on-ramp and Vineyard Boulevard off-ramp.	$6.0
	34	S	Interstate Route H-1, Operational Improvements, Ward Avenue On-Ramp to University Avenue Interchange	Improve traffic flow on the Interstate Route H-1, in the eastbound direction, from the Ward Avenue on-ramp to the University Avenue Interchange through operational improvements.	$65.0
	Second Access Projects—2011 to 2020				
	35	C	Makakilo Drive, Second Access, Makakilo Drive to Kualakai Parkway/ Interstate Route H-1 Interchange	Extend Makakilo Drive (vicinity Pueonani Street) south to the Interstate Route H-1 Freeway Interchange as a four-lane roadway, connecting Makakilo Drive to Kualakai Parkway.	* $69.1
	Transit Projects—2011 to 2020				
	36	C	Honolulu High-Capacity Transit Corridor Project	Plan, design, and construct a fixed-guideway system between East Kapolei and Ala Moana Center. This project includes intermodal connections with TheBus system to provide feeder services to fixed-guideway stations.	$5,532.5
	37	C	TheBus Service, Expansion, Islandwide	Expand TheBus service through increase of capacity of the existing system to accommodate population growth. Expanded service will be ADA-compliant. This includes: • Expansion of services to and within Ewa, Kapolei, Central, and Windward Oahu • Expansion through increase of express service to the North Shore, Waianae, and Windward Oahu • Restructure of service in urban Honolulu	$10.0
	38	C	Transit Centers, Various Locations	Construct transit centers at various locations islandwide to support transit operations.	$70.0
	Operations, Maintenance, and System Preservation—2011 to 2020				
	39	C	City Operations and Maintenance (O&M): Roadways	Maintain and operate the City's existing and future roadways. Includes, but is not limited to, resurfacing, guardrail and shoulder improvements, lighting improvements, drainage improvements, signal and sign upgrades and replacement, etc.	$537.1

* Projects that are included in or are consistent with the City's or State's bicycle plans

Table 7 *Oahu Regional Transportation Plan 2035 Project List (continued from previous page)*

	Project No.	City/ State	Facility/Project Title	Project Description	Estimated Cost in $M ($YOE)
Mid-Range Projects—2011 to 2020	40	C	City Operations and Maintenance (O&M): Transit	Maintain and operate the City's existing and future transit and paratransit operations, and routine maintenance. Includes, but is not limited to, operation of the transit system (including bus, rail, and paratransit), plan, design and construct a third bus operating facility, etc.	$2,900.1
	41	S	State Operations and Maintenance	Maintain and operate the State's existing and future highway operations and routine maintenance. Special Maintenance Program (SMP) Projects include, but are not limited to, pavement repair, preventative maintenance, resurfacing and rehabilitation, etc.	$380.00
	42	S	System Preservation	Preserve the highway system through projects including, but not limited to, bridge replacement and seismic retrofit, guardrail and shoulder improvements, lighting improvements, drainage improvements, sign upgrades and replacement, traffic signal upgrade and retrofit, etc.	$150.7

Cost Subtotal: Mid-Range Plan—2011 to 2020 (by Category)	
Islandwide Projects	$243.5
Safety and Operational Improvement Projects	$204.9
Congestion Mitigation Projects	$1,532.7
Second Access Project	$69.1
Transit Projects	$5,612.5
Operations, Maintenance, and System Preservation	$3,967.9
Total All Categories	**$11,630.6**
Cost Subtotal: Mid-Range Plan—2011 to 2020 (by Jurisdiction)	
City and County of Honolulu Share	$9,422.6
State of Hawaii Share	$2,208.0
Total All Shares	**$11,630.6**

Long Range Projects—2021 to 2035	**Islandwide Projects—2021 to 2035**					
	43	S	Bike Plan Hawaii—Oahu	Implement Oahu elements of the State of Hawaii's *Bike Plan Hawaii* (2003).	✻	$100.0
	44	S	Enhancement Projects	Implement enhancement projects, including, but not limited to, projects from the Transportation Enhancement Program for Oahu.	✻	$50.0
	45	C	Human Services Transportation Coordination Program	Provide a range of transportation services targeted to disadvantaged populations under the Human Services Transportation Coordination Program.		$33.2
	46	C/S	Intelligent Transportation Systems (ITS)	Implement ITS projects including, but not limited to, those identified in the Oahu Regional ITS Architecture.		$138.0
	47	C	Oahu Bike Plan	Implement City and County Bike Projects.	✻	$37.5
	48	S	Transportation Demand Management (TDM) Program	Develop an aggressive TDM program that could include, but is not limited to: 1. Free real-time online carpool matching, 2. Outreach promotion and marketing of alternative transportation 3. Emergency ride home program, 4. Major special events, 5. Employer-based commuter programs, 6. Emerging and innovative strategies (e.g., car sharing).		$20.0

✻ Projects that are included in or are consistent with the City's or State's bicycle plans

Table 7 *Oahu Regional Transportation Plan 2035 Project List (continued from previous page)*

	Project No.	City/ State	Facility/Project Title	Project Description	Estimated Cost in $M ($YOE)
Long Range Projects—2021 to 2035	49	S	Vanpool Program	Continue implementation and expansion of the State's Vanpool Hawaii Program.	$88.1
	Safety And Operational Improvement Projects—2021 to 2035				
	50	S	Farrington Highway, Safety Improvements, Makua Valley Road to Aliinui Drive	Construct safety improvements on Farrington Highway along the Waianae Coast, from Makua Valley Road (Kaena Point) to Aliinui Drive (Kahe Point). This project includes realignment around Makaha Beach Park, between Makau Street and Water Street.	$209.0
	51	S	Highway Safety Improvement Program	Comprehensive program to fund safety improvements to reduce collisions and damage to property. Strategies may include installation of left turn lanes, roadway widenings, traffic signal modifications, installation of rumble strips and crash attenuators, installation of guardrails and bridge railings and others.	$21.2
	52	S	Rockfall Protection, Various Locations	Install rockfall protection or mitigation measures along various State highways at various locations.	$75.0
	53	S	Shoreline Protection Program	Kamehameha Highway and other locations.	$30.0
	Congestion Mitigation Projects—2021 to 2035				
	54	S	Farrington Highway, Widening, Hakimo Road to Kalaeloa Boulevard	Widen Farrington Highway from four to six lanes, from Hakimo Road to Kalaeloa Boulevard, including intersection of Lualualei Naval Road.	* $233.1
	55	C	Kamokila Boulevard	Extend as four-lane roadway between Franklin D. Roosevelt Avenue and Saratoga Street.	* $24.2
	56	C	Fort Barrette Road	Extend as four-lane roadway between Franklin D. Roosevelt Avenue and Saratoga Street.	* $10.7
	57	S	Kalaeloa East-West Spine Road, New Roadway, Kalaeloa Boulevard to Geiger Road	Construct a new four-lane, east-west spine road within Kalaeloa by realigning and connecting portions of the existing Saratoga Avenue from Kalaeloa Boulevard in the west and to Geiger Road in the east.	$271.1
	58	S	Makakilo Mauka Frontage Road, New Roadway, Kalaeloa Boulevard to Makakilo Drive	Construct a new two-lane Makakilo Mauka Frontage Road, mauka of Interstate Route H-1, from Kalaeloa Boulevard to Makakilo Drive.	$18.2
	59	S	Farrington Highway, Widening, West of Fort Weaver Road to Waiawa Interchange	Widen Farrington Highway from Kunia Road to Waiawa Interchange by one lane in each direction, from west of Fort Weaver Road to Waiawa Interchange.	* $130.8
	60	S	Interstate Route H-2, New Interchange, Pineapple Road Overpass	Construct a new full-service freeway interchange on Interstate Route H-2, between Meheula Parkway and Ka Uka Boulevard, to accommodate future developments in Central Oahu. This project includes the widening of the existing Pineapple Road Overpass from two lanes to four lanes; and addition of new on- and off-ramps to and from Interstate Route H-2 at Pineapple Road Overpass.	$102.5
	61	S	Interstate Route H-1, Widening, Waiawa Interchange to Halawa Interchange	Widen the Interstate Route H-1 by one lane in the eastbound direction, from the Waiawa Interchange to the Halawa Interchange.	$540.3
	62	S	Kahekili Highway, Widening, Kamehameha Highway to Haiku Road	Widen Kahekili Highway from two to four lanes, from Kamehameha Highway to Haiku Road. This project also includes the following improvements: • Contraflow in existing right-of-way between Hui Iwa Street and Haiku Road • Intersection improvements at Hui Iwa Street and Kamehameha Highway	* $75.0
	Transit Projects—2021 to 2035				
	63	C	City Rail Rehabilitation and Fleet Expansion	Provide for rehabilitation of track and expansion of rail fleet.	$203.0

* Projects that are included in or are consistent with the City's or State's bicycle plans

Table 7 *Oahu Regional Transportation Plan 2035 Project List (continued from previous page)*

	Project No.	City/ State	Facility/Project Title	Project Description	Estimated Cost in $M ($YOE)
Long Range Projects—2021 to 2035	64	C	TheBus Service, Expansion, Islandwide	Expand TheBus service through increase of capacity of the existing system to accommodate population growth. Expanded service will be ADA-compliant. This includes: • Expansion of services to and within Ewa, Kapolei, Central, and Windward Oahu • Expansion through increase of express service to the North Shore, Waianae, and Windward Oahu • Restructure of service in urban Honolulu	$848.0
	65	C	Transit Centers, Various Locations	Construct transit centers at various locations islandwide to support transit operations.	$9.0
	Operations, Maintenance, and System Preservation—2021 to 2035				
	66	C	City Operations and Maintenance: Roadways	Maintain and operate the City's existing and future roadway. Includes, but is not limited to, resurfacing, guardrail and shoulder improvements, lighting improvements, drainage improvements, signal and sign upgrades and replacement, etc.	$800.3
	67	C	City Operations and Maintenance: Transit	Maintain and operate the City's existing and future transit, and paratransit operations and routine maintenance. Includes, but is not limited to, operation of the transit system (including bus, rail, paratransit, and ferry), replacement of existing fleet, plan, design and construct a third bus operating facility, etc.	$6,872.1
	68	S	State Operations and Maintenance	Maintain and operate the State's existing and future highway operations and routine maintenance. Special Maintenance Program (SMP) Projects include, but is not limited to, pavement repair, preventative maintenance, resurfacing and rehabilitation, etc.	$704.4
	69	S	System Preservation	Preserve the highway system through projects including, but not limited to, bridge replacement and seismic retrofit, guardrail and shoulder improvements, lighting improvements, drainage improvements, sign upgrades and replacement, traffic signal upgrade and retrofit, etc.	$517.7

Cost Subtotal: Long Range Plan—2021 to 2035 (by Category)	
Islandwide Projects	$466.8
Safety and Operational Improvement Projects	$335.2
Congestion Mitigation Projects	$1,405.9
Transit Projects	$1,060.0
Operations, Maintenance, and System Preservation	$8,894.5
Total All Categories	**$12,162.4**

Cost Subtotal: Long Range Plan—2021 to 2035 (by Jurisdiction)	
City and County of Honolulu Share	$8,842.5
State of Hawaii Share	$3,319.9
Total All Shares	**$12,162.4**

Table 7 *Oahu Regional Transportation Plan 2035 Project List (continued from previous page)*

Project No.	City/ State	Facility/Project Title	Project Description	Estimated Cost in $M ($YOE)
			Cost Totals: ORTP 2035—2011 to 2035 (by Category)	
			Islandwide Projects	$710.3
			Safety and Operational Improvement Projects	$540.1
			Congestion Mitigation Projects	$2,938.6
			Second Access Projects	$69.1
			Transit Projects	$6,672.5
			Operations, Maintenance, and System Preservation	$12,862.4
			Total All Categories	**$23,793.0**
			Cost Totals: ORTP 2035—2011 to 2035 (by Jurisdiction)	
			City and County of Honolulu Share	$18,265.1
			State of Hawaii Share	$5,527.9
			Total All Shares	**$23,793.0**
Illustrative Projects				
Illustrative Projects*				
70	S	Interstate Route H-1, On- and Off-Ramp Modifications, Various Locations	Modify and/or close various on- and off- ramps on the Interstate Route H-1.	$108.0
71	S	Kunia Road, Widening and Interchange Improvement, Wilikina Drive to Farrington Highway	Widen Kunia Road as follows: • From two to four lanes, from Wilikina Drive to Anonui Street • From two to four lanes, Anonui Street to Kupuna Loop • From four to six lanes, Kupuna Loop to Farrington Highway • Add one lane to eastbound loop on-ramp at Kunia Road and Interstate Route H-1	$348.9
72	S	Interstate Route H-1, Widening, Waiau Interchange to Waiawa Interchange	Widen Interstate Route H-1 in the westbound direction by one lane from the Waiau Interchange to the Waiawa Interchange.	$338.9
73	S	Interstate Routes H-1 and H-2, Operational Improvements, Waiawa Interchange	Modify the Interstate Routes H-1 and H-2 Waiawa Interchange, to improve merging characteristics through operational improvements (e.g., additional transition lanes).	$112.1
74	S	Interstate Route H-1, Widening, Vineyard Boulevard to Middle Street	Widen the Interstate Route H-1 by one lane in the westbound direction, from Vineyard Boulevard to Middle Street.	$200.0
75	S	Nimitz Highway, High Occupancy Vehicle (HOV) Flyover, Keehi Interchange to Pacific Street	Construct a new two-lane elevated and reversible HOV flyover above Nimitz Highway, from the Keehi Interchange to Pacific Street. This project includes the removal of the existing eastbound contraflow lane in the AM peak and restoration of all turning movements on the at-grade portion of Nimitz highway.	$537.5
76	S	Interstate Route H-1, Widening, Ward Avenue to Punahou Street	Widen the existing Interstate Route H-1 by one lane in the eastbound direction, from Ward Avenue to Punahou Street.	$100.0

Table 7 *Oahu Regional Transportation Plan 2035 Project List (continued from previous page)*

	Project No.	City/ State	Facility/Project Title	Project Description	Estimated Cost in $M ($YOE)
Illustrative Projects	77	S	Waianae, Second Access, Farrington Highway to Kunia Road	Construct a new two-lane second access road to Waianae from Farrington Highway in the vicinity of Maili, over the Waianae Mountain Range, to Kunia Road. Requires Kunia Road, Widening and Interchange Improvement, Wilikina Drive to Farrington Highway (#71) to ensure benefit.	$1,269.0
	78	C	Fixed Guideway, West Kapolei to East Kapolei	Plan, design, and construct a fixed-guideway system between West Kapolei and East Kapolei.	$2,031.6
	79	C	Fixed Guideway, Ala Moana to UH Manoa and Waikiki	Plan, design, and construct a fixed-guideway system between Ala Moana and UH Manoa and Waikiki.	$1,828.4
	80	C	Fixed Guideway, Pearl City to Mililani	Plan, design, and construct a fixed-guideway system between Pearl City and Mililani	$1,268.4
	81	C	East-West Road	Construct as four-lane roadway between Farrington Highway and Fort Weaver Road	$57.3

* Illustrative projects are not included in the financially-constrained Plan due to funding limitations. If additional funding becomes available, they may be considered for amendment to the Plan.

Plan Performance

The ORTP 2035 will help manage growth in travel demand expected from the anticipated growth in population and employment. The OahuMPO travel forecasting model was used to evaluate performance of three alternative conditions, namely the 2007 existing conditions, 2035 Baseline, and the ORTP 2035.

Figure 12 shows projected islandwide travel times by automobile for the AM peak hours to Downtown for the ORTP 2035, while Figure 13 shows the projected travel-time difference to Downtown between the ORTP 2035 and the 2035 Baseline. Travel times generally improve for ORTP 2035 in comparison to the Baseline. Travel

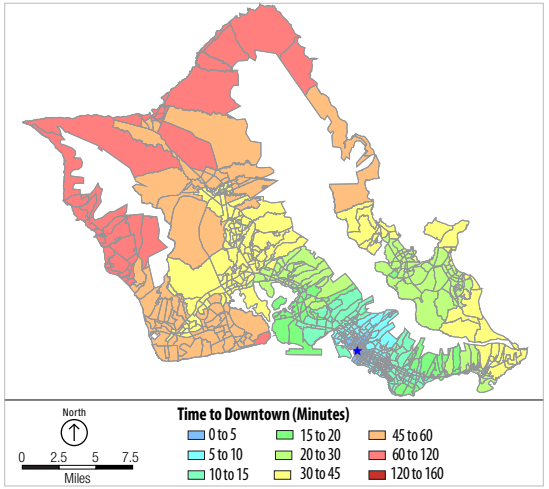


Figure 12 *AM Peak Hour Times to Downtown (ORTP 2035)*

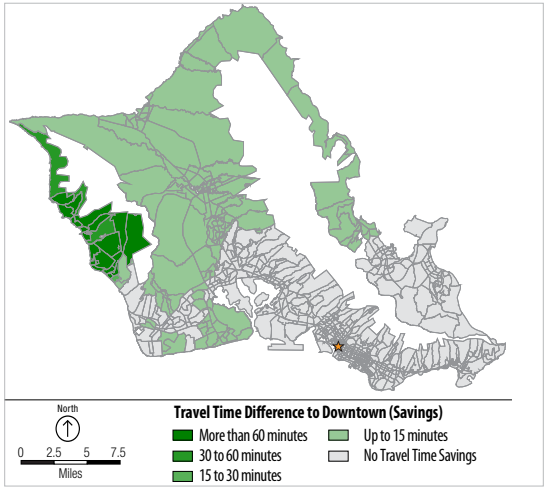


Figure 13 *Travel Time Difference to Downtown (ORTP 2035 vs. Baseline)*

times are comparable for both the Baseline and ORTP 2035 (30 to 60 minutes) from the Kapolei area to Downtown; whereas travel times improve by up to 15 minutes for trips traveling to Downtown from Central Oahu, Ewa, Kaneohe, and the North Shore. Travel times from the Waianae Coast range from 45 to 120 minutes under the ORTP 2035, which is an improvement of 30 to 80 minutes over the Baseline.

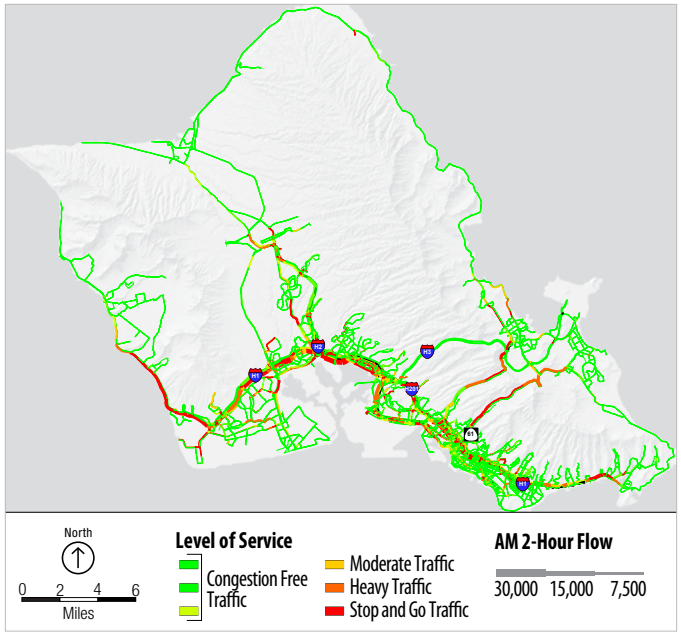


Figure 14 *Roadway Levels of Service (2035 Baseline)*

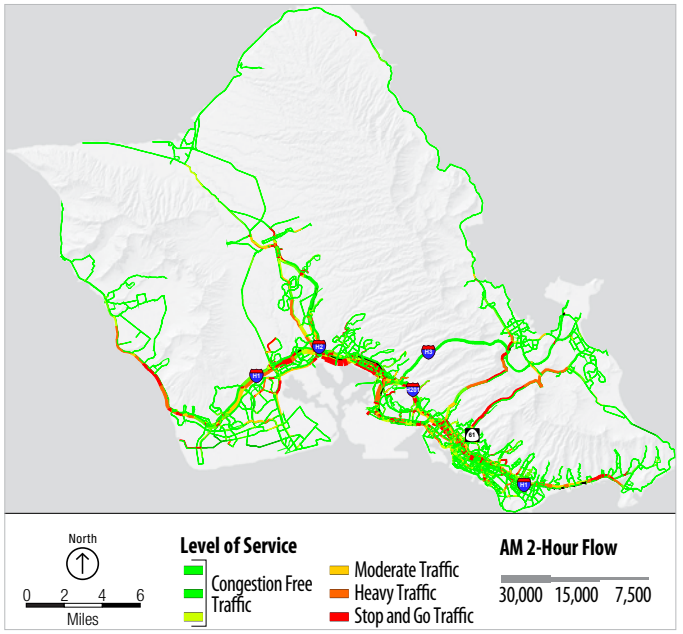


Figure 15 *Roadway Levels of Service (ORTP 2035)*

ORTP 2035 shows positive benefits in reducing congestion during the AM peak hours. As shown in Figures 14 and 15, ORTP 2035 will alleviate some congestion on roadways (shown in orange and red) in the Ewa/Kapolei area, along the Waianae Coast, and in the H-1/H-2 merge area.

Due to population and employment growth out to 2035, higher daily vehicle miles of travel are expected for both the Baseline and the ORTP 2035 in comparison to 2007 existing conditions (Figure 16). ORTP 2035 shows a slight increase (about 1 percent) in daily vehicle miles traveled over the Baseline due to increased capacity of the island's roadway system.

As shown in Figures 17 and 18, even with the slight increase in daily vehicle miles traveled, ORTP 2035 will help reduce delay on major roadways leading to lower hours of travel (by 3.5 percent) and hours of delay (by 18.7 percent) in comparison to the Baseline.

The advent of the HHCTCP will help to dramatically increase transit usage on Oahu. As shown in Figure 19, daily transit boardings will increase by almost 70 percent between 2007 existing conditions and 2035 Baseline. ORTP 2035 shows a very slight decrease in daily transit boardings in comparison.

Environmental Justice Analysis

Two of the goals of the ORTP 2035 are improving equitable accessibility and mobility for all Oahu residents, including

Figure 16 *Daily Vehicle Miles Traveled (2007, 2035 Baseline and 2035 ORTP)*

Figure 17 *Daily Vehicle Hours Delayed (2007, 2035 Baseline and 2035 ORTP)*

Figure 18 *Daily Vehicle Hours Traveled (2007, 2035 Baseline and 2035 ORTP)*

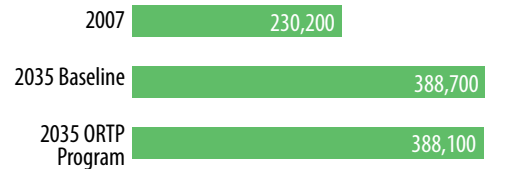


Figure 19 *Daily Transit Boardings (2007, 2035 Baseline and 2035 ORTP)*

Title VI/Environmental Justice (T6/EJ) populations. In order to comply with Title VI of the Civil Rights Act, the OahuMPO must certify that the transportation system provides equitable access and mobility options to all populations.

Improving accessibility is measured by calculating the travel time from home to important destinations, such as shopping centers, employment centers, colleges, and hospitals, for T6/EJ-designated areas and non-T6/EJ areas. The analysis entailed calculating the number of people within a 20-minute drive of those travel destinations under the 2035 Baseline and ORTP 2035. The results indicate that under the ORTP 2035, the number of EJ and non-EJ areas within 20 minutes of hospitals and regional shopping centers is very high and comparable for both the T6/EJ and non-T6/EJ populations. However, non-T6/EJ populations have better accessibility to colleges and employment centers than T6/EJ populations.

Mobility can be defined as the ease of movement of people, goods, and services. The mobility evaluation calculated the average travel time from both T6/EJ and non-T6/EJ areas to selected employment centers during the AM peak period. The analysis results indicate that the difference in average auto travel time to employment centers between T6/EJ areas and non-T6/EJ areas is forecasted to decrease from 19 minutes (baseline conditions) to 11 minutes under the ORTP 2035. Similarly, the difference in average transit travel times to employment centers between T6/EJ areas and non-T6/EJ areas is forecasted to decrease from 26 minutes (baseline conditions) to 18 minutes (ORTP 2035).

Expenditures

Of the $23.8 billion forecast for transportation investments in the ORTP 2035, over $13 billion, or 56 percent of the total, is allocated to projects or programs related to system preservation, safety, operations, and maintenance. Another 28 percent of the total is allocated to transit projects and 12 percent to congestion-mitigation projects, many of them along the H-1 corridor.

To facilitate the development of Ewa/Kapolei and the continued growth of the PUC, many of the congestion-mitigation projects in the mid-term plan (2011–2020) are located in and around those areas or along the H-1 corridor. In addition, a significant portion of the transit capital projects is associated with HHCTCP and service expansion to and within Ewa, Kapolei, and Windward Oahu. These transit expenditures are budgeted in the mid-term plan as well. All of these improvements are anticipated to work

Table 8 *ORTP 2035 Expenditures*

Project (by Category)		Dollars	Percent of Dollars	Number of Projects
2011 to 2020	Islandwide Projects	$243.5	2.1%	8
	Safety And Operational Improvement Projects	$204.9	1.8%	6
	Congestion Mitigation Projects	$1,532.7	13.2%	20
	Second Access Projects	$69.1	0.6%	1
	Transit Projects	$5,612.5	48.3%	3
	Operations, Maintenance, and System Preservation	$3,967.9	34.1%	4
	Total	**$11,630.6**	***100%**	**42**
2021 to 2035	Islandwide Projects	$466.8	3.8%	7
	Safety And Operational Improvement Projects	$335.2	2.8%	4
	Congestion Mitigation Projects	$1,405.9	11.6%	9
	Transit Projects	$1,060.0	8.7%	3
	Operations, Maintenance, and System Preservation	$8,894.5	73.1%	4
	Total	**$12,162.4**	***100%**	**27**

Project Expenditure Totals: ORTP 2035—2011 to 2035	Dollars	Percent of Dollars	Number of Projects
Islandwide Projects	$710.3	3.0%	15
Safety And Operational Improvement Projects	$540.1	2.3%	10
Congestion Mitigation Projects	$2,938.6	12.4%	29
Second Access Projects	$69.1	0.3%	1
Transit Projects	$6,672.5	28.0%	6
Operations, Maintenance, and System Preservation	$12,862.4	54.1%	8
* May not total 100% due to rounding **Total**	**$23,793.0**	***100%**	**69**

together to relieve the most congested corridors in Oahu.

Seventy-three percent of the expenditures in the long-term plan are associated with operations, maintenance, and system preservation projects, and 77 percent of these funds are designated for transit operations. Additional transit expansion projects include express service to the North Shore, Waianae, and Windward Oahu.

Clearly, the priorities evidenced in the ORTP 2035 reflect the stated goal of making Oahu's transportation system more sustainable through investments in the existing infrastructure as well as mass transit. Table 8 shows the breakdown of capital, operations and maintenance, and system preservation expenditures.

Fiscal Constraint

According to Federal statute, the ORTP must demonstrate that there is a balance between the expected revenue sources for transportation investments and the estimated costs of the projects and programs described in the plan. In other words, ORTP must be fiscally (or financially) constrained. ORTP 2035 meets Federal tests of financial constraint. As shown in Figure 20, total revenues exceed Plan expenditures (Table 8) by approximately $2.3 billion.

As shown in Table 9, a variety of different revenue sources are currently used to finance the transportation system on Oahu and in Hawaii. Revenue projections are used to estimate the level of investments Oahu can reasonably afford. The purpose of these projections is to ensure the long-term capability of Oahu to fund transportation projects and programs. As projects move from the ORTP 2035 to implementation, funding assumptions (e.g., sources and amounts of revenues) may be modified. Revisions to the ORTP 2035 can be made during its five-year funding cycle or when an action triggers the need for an adjustment. Amendments to the ORTP 2035 financial plan may be made if major changes are made to the funding assumptions that would affect the Plan's financial viability.

Financial and Policy Implications

Clearly, the projects and programs included in the ORTP 2035 reflect the desire to make Oahu's transportation system more sustainable. The overwhelming share of plan expenditures—88 percent—goes to support maintenance and operations, transit expansion, system preservation, high technology projects such as ITS, and bicycle and pedestrian improvements. The remaining balance goes to congestion-mitigation projects.

The initial capital costs associated with developing a more sustainable transportation system may make it appear to be more expensive than not. Yet, over the long term, increasing transportation choices and access to the transportation system brought about by these investments can be expected to reduce the overall costs of moving people, goods, and services, and enhancing economic competitiveness.

Transportation investments that support community livability can also have multiple co-benefits. Compact, connected, and accessible communities encourage walking, bicycling, and transit use, which provides exercise while reducing the need for auto travel and making trips shorter for those who choose to drive.

Measures that lead to a more sustainable lifestyle are comprised of strategies that reduce congestion, increase access to public transportation, improve air quality, and enhance coordination between land use and transportation decisions. Many of these measures require a concerted effort over time by State and City agencies. The OahuMPO is actively working with the City's Department of Planning and Permitting and the Department of Transportation Services, the State's Department of Transportation, and the Department of Business, Economic Development and Tourism, as well as with

Figure 20 *Comparison of ORTP 2035 Revenues and Expenditures*

Table 9 *Anticipated Revenue Sources*

Source	Estimated Revenue*
Federal Highway Administration	$3,000
Federal Transit Administration	$3,200
State capital funding	$700
State operating and maintenance	$1,200
City and County capital funding	$4,900
City and County operating and maintenance	$8,800
Transit passenger fares	$3,000
Developer funding	$1,300
Total	$26,100

*Millions of Year-of-Expenditure dollars

Waikiki

Federal agencies, such as the Federal Highway Administration, the Federal Transit Administration, the Federal Aviation Administration, the Maritime Administration, the Environmental Protection Agency, and the Department of Housing and Urban Development. In order to institutionalize sustainability goals, these partnerships must continue, and additional stakeholders, such as large employers and the military, must be brought into the conversation.

It is expected that ORTP 2040 will include specific strategies to reduce or mitigate greenhouse gas emissions by reducing vehicle miles traveled; encouraging greater use of transit, carpools, and vanpools; and expanding the network of walkways and bicycle lanes to foster a more sustainable islandwide transportation system.

Fostering livability in transportation projects and programs will improve quality of life, create a more efficient and more accessible transportation network, reduce impacts on the environment, and serve the mobility needs of communities, families, and businesses.

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