

1 8 | INFRASTRUCTURE

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3 Safe, reliable and efficient hard infrastructure and utility systems are critical to the economic vitality and quality of life on Moloka'i. Roads, bridges, harbors, airports, water, wastewater, solid waste, energy, telecommunications and public transit systems provide necessary support for modern life on the island. Responsibility for the installation, operation and maintenance of these systems on Moloka'i is shared between a number of public and private entities. Planning for the installation of new systems and the replacement of deteriorating systems may require coordination among these entities as well as the identification of additional funding sources since County Capital Improvement Program budgets are already strained. Consideration should be given to locating future development near existing infrastructure to leverage prior capital investments and to minimize the high cost of installing new systems.

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Climate Change and Infrastructure Systems

Sea level rise and the associated coastal impacts have the potential to harm an array of infrastructure and environments in Moloka'i including: low lying coastal roads, docking facilities in harbors, water supply and wastewater systems. In many cases these impacts will stress an already ailing infrastructure. Wastewater systems, stormwater infrastructure, water supply and energy facilities are located in low lying areas in close proximity to the coast. Water supply faces threats from both rising groundwater and saltwater intrusion in wells, as well as declining quality and quantity due to drought and downward trends in groundwater base flows.

Improving system resiliency by developing strategies to adapt to environmental challenges such as drought and climate change will be important going forward. This will require identification of critical infrastructure systems that are vulnerable to coastal hazards such as sea level rise to ensure that they are adequately protected or relocated if necessary. For Moloka'i to have a more sustainable future, it will be necessary to incorporate green infrastructure to restore natural systems where possible. ~~Low Impact Development (LID) features design techniques that attempt to maintain the natural, pre-development hydrology of a site and the surrounding watershed, resulting in a more sustainable land development pattern. LID integrates road design with stormwater and wastewater management systems in order to minimize environmental impacts. Stormwater is not considered a waste product to be disposed of, but rather it is viewed as a resource.~~ [Moved to page 8-8, lines 15-19](#)

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1 **8.1 WATER**

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3 **A. EXISTING CONDITIONS**

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5 There are three public water systems on Moloka`i and three private water systems (see Figure 8-1). Most of Moloka`i's water sources are concentrated in the northeast part of the island, whereas, 7 most of the demand is located in the more developed areas to the Central and West Moloka`i and 8 the southeast coast. Water sources include both streams (surface water) and aquifers (groundwater). Due to increasing withdrawals, several wells have been experiencing rising salinity, and as a result, the State Commission on Water Resource Management (CWRM) designated the island as a 10 Ground Water Management Area in 1992. With this designation, the State was authorized to protect 11 the groundwater resources by managing withdrawals from the aquifer through use of a permitting 12 process.

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15 Moloka`i Irrigation System (MIS) water usage has remained constant over the years; however, the 16 system has experienced water shortages due to persistent drought conditions. Efforts to develop 17 new water resources have been considered, such as utilizing brackish water wells and recycled 18 sewage effluent. The County 2015 Capital Improvement Program budget includes design of a 19 new well that is intended as backup source for the Kualapu`u well serving the Kaunakakai area.

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21 **Figure 8-1 Molokai Water System Usage**

Water System	Ownership	Potable (P) or Non-potable (NP)	Water Usage ¹ (gallons/day)	% Potable Consumption	% Non-potable Consumption	% of Total Water Consumption ²
Moloka`i Irrigation System (MIS)	Public	NP	3,250,000	—	95%	61%
Department of Water Services (DWS)	Public	P	807,816 ³	44%	—	16%
Department of Hawaiian Home Lands (DHHL)	Public	P	326,053	17%	—	6%
Waiola-O Moloka`i	Private	P and NP	429,350	13%	5%	11%
Moloka`i Public Utilities (MPU)	Private	P	403,455	21%	—	8%
Kawela Plantation	Private	P	90,000	5%	—	2%

22 Source: Moloka`i Recent Water Use Estimates prepared by the County DWS Planning Division.

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¹Water usage for Waiola and MPU are from 2007; DWS is from 2013;

²Percentage total exceeds 100 due to rounding.

³Includes 23,726 for Kala`e from DHHL system.

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B. ISSUES

- Issue 1: Much of Moloka`i's water delivery system infrastructure is outdated and in need of replacement.
- Issue 2: Potential Contaminating Activities (PCAs) have been identified that may pose a threat to Moloka`i's water quality⁴.
- Issue 3: ~~Disputes over water use and allocation need to be resolved~~ Water uses need to be resolved collectively.
- Issue 4: ~~Droughts have created water supply shortages in recent years.~~ Cyclical and seasonal water shortages have contributed to water supply shortages in recent years.

C. GOAL, POLICIES, AND ACTIONS

GOAL Moloka`i will have a sufficient supply of potable and non-potable water provided in an environmentally sustainable and cost-effective manner.

Policies

1. Recognize water rights of Hawaiian's ~~and DHHL homesteaders~~ under the Hawaiian Homes Commission Act, the State Water Code and other laws.
2. Supply water in sufficient quantities to meet the community's needs.
3. Support the provision of adequately priced irrigation water to agricultural lands.
4. Ensure safe, efficient and reliable island-wide water systems through improvement, replacement, and enhancement of the existing water supply and development of new water sources.
5. Encourage CWRM to update Moloka`i's sustainable yield figures and establish maximum withdrawal values.
6. Encourage water resource conservation ~~planning~~.
7. Encourage use of alternative water sources such as dual line water supply and recycled water distribution systems.
8. Support public and quasi-public partnerships to protect and restore the island's watershed^s and maximize aquifer recharge.

⁴ Molokai Draft Wellhead Protection Ordinance, 2013

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9. Support [better](#) management [and oversight](#) of water withdrawal to ensure sustainable yields.
10. Incorporate [credible](#) local knowledge and [advicse](#) on water resource issues [as appropriate per the CWRM and DOH authority](#).

Actions

No.	Action	Lead County Agency	Partners
8.1.01	Complete an Agriculture Master Plan that ties desired agriculture production areas and uses to reliable, cost-effective water sources.	OED	DOA, DWS UH-CTAHR Farmers
8.1.02	Develop a Support the development of a Moloka'i Water Use and Development Plan (WUDP) for Moloka'i that is consistent with the goals, policies and implementation strategy of the Moloka'i Community Plan, with a comprehensive monitoring, repair, and replacement strategy.	DWS	DHHL, DOA Private Water Co's
8.1.03	Implement recommendations from the 2013 <i>Update of the Hawaii Water Reuse Survey and Report</i> .	DEM	DLNR, DOH CWRM
8.1.04	Promote the DWS water conservation low flow fixture giveaway programs.	DWS	
8.1.05	Develop, adopt and implement a wellhead protection strategy and ordinance for County water distribution systems.	DWS	DOH
8.1.06	Encourage the DWS and DHHL to work together to address future water demand and supply issues.	DWS	DHHL, CWRM
8.1.07	Explore the possibility of requiring new developments with privately owned public water systems to meet DWS engineering standards.	DWS	
8.1.08	Explore the possibility of DWS taking over Molokai Ranch water systems.	DWS	Molokai Ranch

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1 **8.2 WASTEWATER**

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3 The Maui County Code defines wastewater as “water-carried wastes from dwellings, commercial
4 establishments, institutions and industrial plants, and may include groundwater, surface water
5 and storm water not intentionally admitted.” Management of wastewater is important because it
6 helps guard the water supply from becoming contaminated, protects the public health and envi-
7 ronment, and aids in water conservation by allowing reclaimed water to be used for non-potable
8 water purposes. Wastewater on Moloka`i is now managed using public and private wastewater
9 systems, individual septic systems, and cesspools. The main issues with the island’s wastewater
10 systems are vulnerability of the current facility to hazards and the use of the individual septic
11 tanks and cesspools.

12
13 **A. EXISTING CONDITIONS**

14
15 The County of Maui Department of Environmental Management, Wastewater Division, provides
16 wastewater service in the town of Kaunakakai and the Kualapu`u subdivision. Wastewater col-
17 lected by the Kaunakakai system is treated at the County’s Kaunakakai Wastewater Reclamation
18 Facility (WWRF). Wastewater collected by the Kualapu`u system goes to the private facility that is
19 owned and operated by Molokai Properties Limited (MPL), which also treats Maunaloa Town and
20 Kaluakoi as well as the Paniolo Hale and Ke Nani Kai condominium developments. [The re are al-](#)
21 [so private wastewater treatment facilities at Wavecrest Resort, Molokai Shores, and Hotel Molo-](#)
22 [kai. The](#) remainder of the island is served by individual septic tanks and cesspools, including all
23 schools, all major visitor accommodations, the Ho`olehua Airport, and all development on De-
24 partment of Hawaiian Home Lands (DHHL) homesteads.

25
26 Cesspools are considered substandard systems because they don’t treat wastewater, they mere-
27 ly dispose of it. Cesspools concentrate wastewater in one location, often in direct contact with
28 groundwater, causing groundwater contamination. This groundwater flows into drinking water
29 wells, streams and the ocean, harming public health and the environment. In 2014, the Depart-
30 ment of Health (DOH) proposed revisions to its Wastewater Systems Rules that will update the
31 regulation of cesspools in Hawaii. Proposed changes include prohibiting the installation of new
32 cesspools and requiring connections or upgrades of existing cesspools that most affect human
33 health and water quality within one year after the sale of property. Only cesspools that are near a
34 public drinking water well, and those within 750 feet of the shoreline, a stream, or a wetland will
35 be affected. There is a total of 1,442 cesspools on Moloka`i; 505 (35%) are affected by the pro-
36 posed regulations.

37
38 The Kaunakakai WWRF is located on a 23-acre shoreline property makai of Maunaloa Highway.
39 The facility treats wastewater to R-2 standards (disinfected secondary treated recycled water with
40 restrictions on uses and applications). The Wastewater Division has indicated that the 0.3 mgd
41 capacity of the WWRF is currently adequate. This conclusion is supported by the State Depart-
42 ment of Health’s decision to waive the requirement for development of a facilities plan, which is
43 normally mandated when a facility reaches 75% of capacity.

1 ~~A 2004 corrosion study identified a number of force mains that require replacement in order to~~
2 ~~avoid costly line failures and possible major sewage spills.~~ There are two County force mains on
3 the island. The Kaunakakai force main was replaced in 2007 and the effluent force main is tenta-
4 tively scheduled for replacement in fiscal year 2019 at an approximate cost of \$2 million⁵. The
5 Kaunakakai Wastewater Pump Station was upgraded in 2012 ~~force main was replaced in 2007,~~
6 extending its useful life by 20 years. In 2009, a closed circuit TV inspection of all major sewer
7 lines was conducted which concluded that the existing system is in very good to excellent condi-
8 tion. ~~The Kaunakakai effluent force main is scheduled for replacement in fiscal year 2019 at an~~
9 ~~approximate cost of \$2 million⁶.~~

10
11 Reclaimed water from the WWRF is utilized to a limited extent. Approximately 10,000 gallons per
12 day (45% of total flow) are used to irrigate landscaping in the facility and roadway grassed areas.
13 The remaining flow of roughly 240,000 gallons per day is disposed of by injection well. Expansion
14 of water reuse to serve R-1 water to the community center, the park, and the elementary school
15 in Kaunakakai would require a \$5 million mile-long distribution system and a new ultraviolet water
16 purification system and retrofits costing around \$6 million.

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19 **B. ISSUES**
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23 Issue 1: Kaunakakai WWRF ~~Wastewater Reclamation Facility~~ is located in the coastal
24 floodplain leaving it exposed to damage from tsunamis or other dangerous high
25 water events.

26
27 Issue 2: There are a number of Individual Wastewater Systems (IWS's) such as cess-
28 pools and septic systems in use on the island in close proximity to ground water
29 drinking sources.

30
31 Issue 3: Potable water resources are used for purposes such as flushing toilets and
32 home garden irrigation.

33
34 Issue 4: Cesspools and septic systems located within the coastal zone are at risk of fail-
35 ure due to groundwater table rise due to sea level rise and flooding.

36
37
38 **C. GOAL, POLICIES, AND ACTIONS**
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40 **GOAL** Moloka`i will have reliable, efficient and environmentally sensitive wastewater
41 services that meet future needs and maximize wastewater reuse where feasible.
42

⁵ [County of Maui, 2016 Capital Improvement Program](#)

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1 **Policies**

- 2 1. Meet or exceed State and Federal standards for wastewater disposal or reuse
 3 where feasible.
 4
 5 2. Promote development of neighborhood-scale wastewater disposal systems [in](#)
 6 [new subdivisions outside of existing service areas.](#)
 7
 8 3. Promote the beneficial use of recycled wastewater [where economically viable.](#)
 9
 10 4. Promote economical, environmentally sensitive and innovative methods for dis-
 11 posal of excess treated wastewater effluent.
 12
 13 [5.](#) Promote location of new critical infrastructure or relocation of existing systems
 14 outside of inundation zones vulnerable to coastal hazards.
 15
 16 [5-6.](#) [Promote development of new septic system upgrade standards and cesspool](#)
 17 [elimination standards for those systems at risk within the coastal zone.](#)

18 **Actions**

No.	Action	Lead County Agency	Partners
8.2.01	Assess the feasibility of either providing measures to protect the Kaunakakai WWTF against inundation threats or of relocating it out of the coastal floodplain.	DEM	DWS, DHHL, DOA, DOH, EPA
8.2.02	Develop a Comprehensive Wastewater Functional Plan.	DEM	DPW, DWS, DSA
8.2.03	Conduct a wastewater reuse study that includes identification of potential reclaimed water users, required infrastructure improvements, estimated costs, and funding sources.	DEM	DWS, DHHL, DOA, DOH
8.2.04	Explore options and necessary code and regulation changes to allow graywater reuse systems for irrigation and toilet flushing.	DPW DSA	DEM DOH
8.2.05	Replace the Kaunakakai effluent force main prior to the end of its useful life.	DEM	

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1 **8.3 Stormwater Management ~~Drainage~~**
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3 Moloka`i is formed by three volcanoes: West Moloka`i, East Moloka`i, and the Kalaupapa Pen-
4 insula. West Moloka`i rises to 1,400 feet in elevation and East Moloka`i to about 5,000 feet. In
5 the Kaunakakai watershed, the average elevation is about five feet near the coast rising to
6 4,200 feet in the mountains. Median annual rainfall ranges from about 10 inches on the coast to
7 about 75 inches at the upper elevations.⁷

8
9 Moved from page 8-1, lines 18-24:

10 Stormwater can be viewed as a resource to manage, rather than a problem of excess water to
11 be drained into the ocean. Low Impact Development (LID) features design techniques that at-
12 tempt to maintain the natural pre-development hydrology of a site and the surrounding water-
13 shed, resulting in a more sustainable land development pattern. LID integrates road design
14 with storm and wastewater management systems to minimize environmental impacts and to re-
15 charge groundwater when possible.

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17
18 **A. EXISTING CONDITIONS**
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20 Drainage problems on Moloka`i from runoff during periodic rain and storm events have caused
21 damage to homes and businesses for years. The resulting flooding creates hazardous conditions
22 and inconveniences for residents and visitors. A combination of natural and manmade factors
23 contribute to the problem including poorly drained soils in low-lying areas, and flat terrain, as well
24 as inadequate, nonexistent or poorly maintained drainage systems in Kaunakakai town.

25
26 Existing drainage systems were designed to convey, divert, or retain runoff generated within the
27 vicinity. However, many of these systems are badly in need of maintenance or regionally inade-
28 quate, and many of the downstream systems (ditches and roadway culverts) are incapable of ac-
29 commodating the runoff generated from developed conditions upstream. During heavy flows, wa-
30 ter will overtop the Kaunakakai Stream crossing over Kamehameha Highway and other low lying
31 roadways across the island resulting in severely hampered access and flooding mauka of road-
32 ways to emergency services.⁸

33
34 The Kaunakakai Stream levee has adequately prevented flooding from occurring within the Kau-
35 nakakai area. However, analysis completed in March of 2014 by the U.S. Department of Home-
36 land Security's Federal Emergency Management Agency (FEMA) showed that the Kaunakakai
37 levee system does not provide a high level of protection against a 100-year flood event. FEMA
38 has proposed revising the Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS)
39 reports. These changes could affect a number of properties in Kaunakakai. Property owners with-
40 in the newly mapped high-risk areas with certain mortgages would be required to obtain flood in-
41 surance.
42

⁷ County of Maui Infrastructure Assessment Update, 2003

⁸ Maui Infrastructure Assessment Update, 2003

1 **B. ISSUES**
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4 Issue 1: Storm water flows with heavy sediment loads and other pollutants down dirt
5 roads into gulches and the ocean.
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7 Issue 2: Localized minor flooding causes repeated areas of water ponding or mud.
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9 Issue 3: There is poor drainage throughout the entire island.

10
11 Issue 4: Sheet flow travels down slope to Kapaakea which has little to no stormwater
12 drainage mitigation.

13
14 Issue 5: Stormwater flows that are not managed adequately may impact wastewater sys-
15 tems.
16
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18 **C. GOAL, POLICIES, ACTIONS**
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21 **GOAL** Surface water runoff is managed to prevent flooding and to improve water
22 quality for both fresh and coastal waters.
23

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25 **Policies**

- 26 1. Support improvement of the island's drainage system
27
28 2. Provide surface water management for roadways and developed areas.
29
30 3. Manage surface water using natural system drainage, retention, and filtration
31 to reduce flooding and siltation of ocean waters.
32
33 4. Encourage DHHL compliance with County regulations on drainage.
34
35 4.5. Encourage development of an effective stormwater drainage plan for the Ka-
36 paakea subdivision.
37

38 **Actions**

No.	Action	Lead County Agency	Partners
8.3.01	Develop a comprehensive stormwater management plan for settlement areas that emphasizes use of natural systems drainage where possible.	DPW Planning Dept.	DHHL
8.3.02	Build dispersion and retention facilities to address dirt road runoff.	DPW	DHHL
8.3.03	Implement Kaunakakai Master Drainage Plan.	DPW	

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8.3.04	Inspect, and if necessary, repair or install new stormwater drainage swales and culverts and remove blockages from drains and channels.	DPW	DHHL
8.3.05	Prepare a GIS database which inventories existing stormwater infrastructure.	DPW	DHHL
8.3.06	Evaluate older swales and drains for current functioning and restore, if needed. Add natural drainage storage and filtration to supplement existing system.	DPW	DHHL

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1 **8.4 Solid Waste**

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3 **A. EXISTING CONDITIONS**
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5 Moloka'i's Integrated Solid Waste Facility (MISWF) is located at the 25 acre Naiwa Landfill and
6 Recycling Center. The facility accepts solid waste for the entire island and receives approximately
7 17 tons of waste each day. Permitted landfill capacity was projected to be exhausted by 2015;
8 approximately \$3 million was expended in 2014 to build Landfill Cell No. 4, providing additional
9 waste disposal capacity until 2029.

10
11 In 2009, the Department of Environmental Management's Solid Waste Division updated its coun-
12 ty-wide Integrated Solid Waste Management Plan (ISWMP). The ISWMP provides a comprehen-
13 sive blueprint for the planning and expansion of the County's solid waste management system.
14 The ISWMP has a goal of achieving a 60% recycling of the waste stream. Although there is no
15 curbside recycling on Moloka'i, the Recycling Center has a drop-off program that accepts both
16 residential and commercial waste. The Moloka'i Metals Facility accepts scrap metals, appliances,
17 vehicles and other metal waste periodically on scheduled collection events. The County's 2015
18 Capital Improvement Program (CIP) budget includes funding for design and construction of a new
19 recycling facility, however, the project has been postponed and will be re-evaluated in the 2017
20 budget.

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23 **B. ISSUES**
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27 Issue 1: Too much solid waste is being sent to landfill [and the recycling level is low.](#)

28
29
30 Issue 2: There are no facilities for scrapping vehicles, machinery, metal, household haz-
31 ardous waste, white goods and bulky goods.

32
33 [Issue 3: There is a problem with illegal dumping accross the Island.](#)

34
35 [Issue 4: There is no legally operating junkyard on Moloka'i.](#)

36
37 [Issue 5: There is a low percentage of people that recycle on Moloka'i.](#)
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1 C. GOAL, POLICIES, AND ACTIONS
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5 **GOAL** Moloka'i will minimize the volume of solid waste that enters the is-
6 land's landfill through a comprehensive and environmentally sound
7 approach to solid waste management.

8
9 **Policies**

- 10 1. Make County government operations a model for zero waste.
11
12 2. Educate the public about waste reduction programs and measures.
13
14 3. Support increased recycling by commercial and residential customers,
15 including bulky, hazardous, and metal waste materials.
16
17 4. Support the development of efficient and cost effective ways to deal
18 with obsolete and abandoned vehicles, machinery, and appliances.
19
20 ~~5. Encourage waste to energy solutions.~~
21
22 ~~6.5.~~ Ensure that all solid waste and recycling facilities are landscaped and well
23 maintained.
24
25 ~~6.~~ Ensure that leachate from landfill sites, either expanded or new, does not
26 degrade soil or pollute ground, surface, or coastal waters.
27
28 ~~7.~~ Support efforts to instill better education about hazardous waste disposal.
29
30
31 ~~7.8.~~ Explore the possibility of developing a "cradle to grave" recycling program
32
33

34 **Actions**

No.	Action	Lead County Agency	Partners
8.4.01	Complete construction of a new recycling facility to avoid existing conflicts with operation of the landfill.	DEM	
8.4.02	Expand waste diversion and recycling programs that include appliances, metals, plastic, glass, cardboards, green-waste (for compost) and other recyclable materials.	DEM	Private Waste Collectors
8.4.03	Increase Develop public outreach, education, and incentive programs that improve waste reduction, reuse, and recycling.	DEM	DOH
8.4.04	Implement the ISWMP through programs, improvements, and upgrades to the solid waste management system; execute the CIP budget in a timely manner.	DEM	DOH, Private Waste Collectors
8.4.05	Expand the <u>solid waste</u> recycling center's operating hours. <u>Develop transfer stations across the island</u>	DEM	
8.4.06	Increase the number of public trash cans throughout the island.	DEM	
8.4.07	<u>Explore waste-to-energy solutions.</u>	<u>DEM</u>	
8.4.08	<u>Explore the development of "take it or leave it" dump sites.</u>	<u>DEM</u>	
8.4.09	<u>Develop educational signage to be located at the entry of the County</u>	<u>DEM</u>	

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	recycling site.		
8.4.10	Expand recycling efforts at all Moloka'i schools.	DOE, DEM	
8.4.11	Encourage the sale and use of highly compostable flatware and food containers.	?	
8.4.12	Explore the feasibility of having more transfer stations located throughout Moloka'i Island.	DEM	
8.4.07	Explore opportunities to get funding to remove abandoned vehicles.	DEM	

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PD DRAFT

1 **8.5 Transportation**

2
3 An integrated, affordable multi-modal transportation system is critical to the quality of life for Mo-
4 loka`i residents, and to support a diversified economy. Moloka`i relies heavily on its [air and sea](#)
5 transportation systems ~~—air and sea—~~ to ~~deliver~~ [transfer](#) people, goods and services to [and from](#)
6 the island. Most consumable goods are transported to the island via barge, making the cost of
7 most items more expensive than on Maui or on O`ahu. Reliance on an effective, efficient and af-
8 fordable inter-island passenger transportation system is also evidenced by survey results that
9 show 60% of residents travel off-island for health care services⁹.

10
11 **A. EXISTING CONDITIONS**

12
13 **Air**

14 Moloka`i has two airports - Moloka`i Airport and Kalaupapa Airport - although only Moloka`i Air-
15 port is located in Maui County. Moloka`i Airport originally opened in 1929 and has two general
16 aviation runways located on 288 acres on the island’s central plateau. It is owned and operated
17 by the State of Hawaii, Department of Transportation Airports Division. The facility is designated
18 as a small commercial airport with a transport runway classification. Moloka`i is served by [pas-](#)
19 [senger air](#) carriers [including](#) Mokulele, and Ohana by Hawaiian [and air cargo carriers including](#)
20 [Fed Ex](#). In 2013, Moloka`i Airport had a total of 34,518 aircraft arrivals and departures, [which is](#)
21 [4% of the statewide total number of airport operations](#).¹⁰

22
23 The *Molokai Airport Master Plan* was prepared in 1999 by the Hawaii Department of Transporta-
24 tion (HDOT) Airports Division. To accommodate the projected demands through the year 2020,
25 recommended upgrades include extending and improving the airfield runway and taxiway, build-
26 ing a new terminal building, and improving parking and terminal roadways.

27
28 **Sea**

29 Moloka`i has a mix of harbor facilities. Kaunakakai Harbor on the south side of the island is the
30 primary harbor for the island. It includes 2 berths, 29 moorings, 1 ramp, and 1 pier. Hale o lono,
31 located 7 miles southwest of Cape Halawa, is a ruined wharf with 1.5 acres of protected anchor-
32 age for day and overnight recreation. Kamalo Wharf on the south shore is considered a tempo-
33 rary-use facility rather than a permanent mooring area.

34
35 The Moloka`i Ferry is a privately owned operation that [offers one daily round trip passenger ser-](#)
36 [vice traveling](#) ~~transports passengers twice daily~~ back and forth between Lahaina on Maui and
37 Kaunakakai. [In July of 2015, the owner sought PUC approval to operate on an “as needed” basis](#)
38 [due to declining passenger numbers attributed to competition from low priced airfares.](#)

39
40 There is no longer a direct freight ferry service connection between Moloka`i and Maui, which
41 creates logistical problems for producers of perishable goods. Also, the current Young Brother
42 freight ferry schedule makes it difficult to ship perishable goods from Honolulu, since goods de-

⁹ Hawaii Statewide Transportation Plan – Report on Public Opinion Poll, November 2010

¹⁰ Source: Hawaii State Department of Transportation, Airports Division

1 parting there on the Sunday night ferry are only accepted on Friday until 11:00 am. Products orig-
2 inating or arriving outside of Hawaii first arrive in Oahu then move on to Moloka`i. The additional
3 leg of travel increases Moloka`i shipping costs and shipping times, which can affect spoilage
4 rates for agricultural products.
5
6

7 **Land**

8 Most roads on Moloka`i are publicly owned and managed; the County is responsible for local
9 roads and the State for Kamehameha V Highway (Hwy 450), Maunaloa Highway (Hwy 460) and
10 Kalae Highway (Hwy 470). Traffic volumes on Moloka`i are generally low and growth projections
11 do not anticipate much of a change in the future. The *Moloka`i Long-Range Land Transportation*
12 *Plan* was prepared by HDOT in 1997. The goal of the plan is to provide a safe and efficient land
13 transportation system through the year 2020.
14

15 The 1997 HDOT plan recommended upgrades to address several issues such as improving
16 drainages, constructing bridges, and widening roadways at a number of locations around the is-
17 land. There is significant shoreline erosion along Kamehameha V Highway on the southeast side
18 of the island. Reinforcing, protecting, or relocating these segments may be necessary in order to
19 maintain safety and reliable operations.
20

21 Moloka`i is largely rural and has few pedestrian facilities. The *Statewide Pedestrian Master Plan*
22 (HDOT, 2013) considers persons living below the poverty level, the elderly, and students to be
23 Pedestrian-Oriented Populations. Moloka`i has a higher than average concentration of persons
24 living below the poverty level. The Pedestrian Plan recommended improvements to Farrington
25 Avenue near Molokai High School due to concerns over student safety.
26

27 The island does not currently have a bikeway system; however, bicycle improvements have been
28 planned along nearly 60 miles of roadway on Moloka`i.¹¹ While there is no [formal](#) public transit
29 system on the island, the non-profit social services agency Maui Economic Opportunity (MEO)
30 operates a rural shuttle service for youth, elderly, disabled and the general public. [The MEO shut-](#)
31 [tle service is funded by a grant from the Maui County DOT.](#) The MEO shuttle serves three service
32 areas: Moloka`i East, Moloka`i West, and Moloka`i Central. Private commercial taxi and shuttle
33 services are also available.
34

35 In 2009, the Hawaii legislature amended state statutes to require the Hawaii Department of
36 Transportation (HDOT) and Hawaii's four county transportation (~~at~~ or public works) departments to
37 adopt 'Complete Streets' policies that accommodate all users of roadways, including pedestrians,
38 bicyclists, transit users, motorists and persons of all ages and abilities. Complete Streets is a rela-
39 tively new approach to street and transportation design which aims to accommodate all users of
40 roadways and rights of way. Maui County has a Complete Streets policy and consideration of this
41 policy should be made for the design of Moloka`i's roadways.
42

¹¹ *Bike Plan Hawaii*, Hawaii Department of Transportation 2003

1 **Projected Multi-Modal Transportation System**

2
3 **Multi-Modal Transportation System Future Vision** (To be further developed)

4 Moloka'i will have a safe, efficient and effective multi-modal land transportation system:

- 5 ▪ Designed to maintain harmony between the natural and constructed environments to
- 6 ensure that the natural beauty and character of Moloka'i is preserved;
- 7 ▪ Composed of complete streets, roads and highways that accommodate multiple us-
- 8 ers including freight, trucks, cars, transit vehicles, bicycles, and pedestrians;
- 9 ▪ Designed to enhance the character and quality of life in Moloka'i's small towns as
- 10 walkable, pedestrian oriented, compact communities; and
- 11 ▪ Providing cost-effective connections to air and sea transportation facilities at the in-
- 12 terisland transportation hubs at Kaunakakai Harbor and Moloka'i Airport.

13
14 **Future Roadway Improvements & New Roads** (To be further developed)

15
16 **Future Transit** (To be further developed)

17
18 **Future Bicycle Facilities and Trails** (To be further developed)

19
20 **Future Pedestrian Facilities** (To be further developed)

21
22
23 **B. ISSUES**

24
25
26 Issue 1: High shipping costs and limited options place Moloka'i businesses at a competi-

27 tive disadvantage.

28
29 Issue 2: The current ferry schedule makes it difficult to ship perishable goods between is-

30 lands or to the mainland. [There is a lack of options to bring in goods and ser-](#)

31 [vices.](#)

32
33 Issue 3: There is significant shoreline erosion along Kamehameha V Highway on the

34 southeast side of the island.

35
36 Issue 4: ~~[The lack of bike paths and sidewalks is a concern. There is concern about pe-](#)~~

37 ~~[destrian and bicycle safety because many of Moloka'i's streets do not have](#)~~

38 ~~[sidewalks or bike lanes.](#)~~

39
40 [Issue 5: Moloka'i has only one recreational boat ramp facility located in Kaunakakai.](#)

41
42 ~~[Issue 6: There is no island wide public transportation system.](#)~~

43
44 [Issue 7: There is no inter-island public ferry system.](#)

45
46 [Issue 8: There is a lack of options to bring in goods and services.](#)

47
48 [Issue 9: Some of Moloka'i's existing private roadways are not compliant with Maui County](#)

49 [standards.](#)

1 C. GOAL, OBJECTIVES, POLICIES, ACTIONS
2
3

4 TRANSPORTATION
5

6 GOAL Moloka'i will have an integrated multi-modal transportation system that
7 supports a diversified economy and meets the needs of residents and
8 visitors while respecting the island's rural character.
9

10
11 Policies

- 12 1. Support the expansion of air services to Moloka'i as needed.
- 13
- 14 2. Support implementation of the 1999 Airport Master Plan that anticipates
15 extending and improving the airfield runway and taxiway and a new termi-
16 nal building with onsite parking and terminal roadways.
- 17
- 18 3. ~~Encourage~~Ensure rapid and cost effective transport of Moloka'i's agricul-
19 tural products to Maui and Oahu markets.
- 20
- 21 4. Explore options for a direct barge service or a passenger ferry that can car-
22 ry goods from Moloka'i to Maui.
- 23
- 24 5. Support improvements to Kaunakakai Harbor.
- 25
- 26 6. Support the improvement and, if warranted, expansion of public or gov-
27 ernment run ferry service from Moloka'i to Maui.
- 28
- 29 7. Maintain the rural character of Moloka'i's road system while accommodat-
30 ing multiple modes of transportation – including transit, freight vehicles, au-
31 tomobiles, pedestrians, and bicycles.
- 32
- 33 8. Support improving access to East Moloka'i during wet weather events by
34 providing bridges at sites of flooding on Kamehameha V Highway.
- 35
- 36 ~~9. Encourage innovative and alternative traffic management strategies such~~
37 ~~as the installation of modern roundabouts to avoid the use of traffic lights.~~
- 38
- 39 ~~10.9.~~ Support safe pedestrian routes and bike paths along highways
40 and arterials in accordance with the County's *Complete Streets Policy*.
- 41
- 42 10. Support continued coordination between the County DOT and MEO to pro-
43 vide rural shuttle services that meet the needs of youth, elderly, disabled,
44 and the general public improving and expanding bus service by adding ad-
45 ditional bus stops between communities on Moloka'i.
- 46
- 47 11. Support Molokai's existing and future private roadways achieving compli-
48 ance to Maui County standards.
- 49
- 50 12. Build a boat ramp in East Moloka'i.
- 51
- 52 13. Bikeways and sidewalks should be installed, connected and or improved in
53 the urban core and immediate outlying areas.
- 54
- 55 ~~11. Encourage the expansion of MEO bus service.~~
- 56

56 Actions

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No.	Action	Lead County Agency	Partners
8.5.01	Work with State DOT to encourage <u>ensure</u> that the airport and air services meet the needs of Moloka'i's residents, visitors and businesses.	OED	Planning Dept. HDOT
8.5.02	Support the continued air services between <u>Explore the need for and impacts of regular air service between</u> topside Moloka'i and Kaunapapa.	OED	Planning Dept. HDOT
8.5.03	Encourage the State to implement HDOT's 1999 <u>2015</u> <i>Molokai Airport Master Plan</i> .	OED	HDOT
8.5.04	Identify challenges and propose solutions to transporting Moloka'i agricultural products to Maui and Oahu markets.	OED	Planning Dept. HDOT
8.5.05	Advocate for increased barge and ferry service to and from Moloka'i.	OED	HDOT
8.5.06	Identify harbor and airport improvements designed to further support the agricultural industry.	OED	Planning Dept. HDOT
8.5.07	Develop Hale O Lono Harbor for recreational purposes and ensure public access, while maintaining its ability to provide back-up commercial capacity to Kaunakakai.	DPW	HDOT
8.5.08	Plan for an integrated multi-modal transportation system with complete streets that serve automotive, public transit, bicycle, pedestrian, and other land transportation modes.	DPW	HDOT <u>Planning Dept.</u>
8.5.09	Develop Moloka'i specific roadway standards and guidelines <u>consistent with BCT guidelines for rural roads.</u>	DPW	Planning Dept.
8.5.10	Encourage the State to implement HDOT's 2003 <i>Bike Plan Hawaii</i> .	DPW	HDOT
8.5.11	Encourage the State to <u>update and</u> implement HDOT's 1997 <i>Moloka'i Long-Range Land Transportation Plan</i> .	DPW	HDOT
8.5.12	Develop and implement a trail, greenway and open space access plan that utilizes old agriculture roads <u>and trails</u> where appropriate.	Planning Dept.	Parks & Recreation
8.5.13	Improve traffic circulation in Kaunakakai by developing a new access road between mauka residential areas and Kamehameha V Highway.	DPW	HDOT
8.5.1 3 <u>4</u>	Integrate a parking study with parking mitigation measures <u>appropriate for Moloka'i</u> into a Kaunakakai Revitalization and Beautification Plan. <u>Explore the concept of centralized parking in Kaunakakai Town and utilize areas such as the Old Electric Park.</u>	Planning Dept.	DPW
8.5.1 4 <u>5</u>	Evaluate existing MEO transportation services <u>to identify possible improvements to routes and pick-up and drop-off locations. in cooperation with MDOT to determine community transit needs. and determine if there are underserved routes or user groups.</u>	DPW	MEO
8.5.1 5 <u>6</u>	Explore the feasibility of providing County bus service on Moloka'i.	DOT	HDOT
8.5.16	Improve bus stop facilities.	DPW	MEO
<u>8.5.17</u>	<u>Support additional access routes located around Kaunakakai to facilitate access to and from town.</u>	<u>DPW</u>	<u>DOT</u>
<u>8.5.18</u>	<u>Explore the possibility of the County acquiring privately owned roads on Moloka'i.</u>	<u>DPW</u>	

1
2

1 **8.6 Energy**

2 The cost to produce power in Hawai'i is higher than on the U.S. mainland for a number of rea-
3 sons ~~including; there are~~ no economies of scale in Hawai'i's market due to the relatively small
4 population base, and the use of imported crude oil to fuel the power generators ~~that~~ makes Ha-
5 wai'i vulnerable to global crude oil price fluctuations.

6
7 **A. EXISTING CONDITIONS**

8
9 In 2013, MECO had 12 megawatts of diesel-generating capacity that provided electricity to 2,649
10 residential customers and 562 commercial customers on Moloka'i. ~~In 2012, MECO lost about~~
11 ~~\$200,000 subsidizing the island's electricity rates. The average residential electricity rate on Mo-~~
12 ~~loka'i was 46 cents per kilowatt hour (kWh); the rate was 37 cents per kWh on Maui; and it was~~
13 ~~12 cents per kWh nationally. In 2012, MECO lost about \$200,000 subsidizing Moloka'i's electrici-~~
14 ~~ty rates¹². There is potential for the island to generate much of its own electricity if its energy in-~~
15 ~~frastructure is improved. Currently Per PUC rules, the electrical grid threshold is set to no current-~~
16 ~~ly can't handle~~ more than 15% input from small scale individual wind/solar power ~~systems in or-~~
17 ~~der to avoid compromising service to other customers on the same circuit.~~ In order to accommo-
18 date more new small scale wind and solar power sources, existing electrical distribution controls
19 will need to be upgraded with smart grid technology to better manage these intermittent sources
20 of electricity.
21

22 ~~In 2013, the average residential electricity rate on Moloka'i was 46 cents per kilowatt hour (kWh);~~
23 ~~the rate was 37 cents per kWh on Maui; and it was 12 cents per kWh nationally.~~The State of Ha-
24 wai'i and the US Department of Energy launched the Hawai'i Clean Energy Initiative in 2008.
25 ~~The goal is to meet 70% of the state's energy needs by 2030 through energy efficiency and re-~~
26 ~~newable energy; additional renewable energy sources would provide 40% and increased energy~~
27 ~~efficiency 30%. In 2015³, approximately 48²¹% of Hawai'i's electricity was generated from re-~~
28 ~~newable resources; primarily from bioenergy, wind, geothermal, and rapidly expanding solar. The~~
29 ~~electric utility renewable energy portfolio goals were updated in 2015 to 30 percent by December~~
30 ~~31, 2020, 70 percent by December 31, 2040, and 100 percent by December 31, 2045~~

31
32 Moloka'i has more than enough renewable energy resource potential to meet electrical demand.⁶
33 It's estimated that four 1.5-megawatt wind turbines could meet half the island's electrical use and
34 Moloka'i also has sites that are suitable for utility-scale solar and biomass projects. In 2013,
35 Princeton Energy Group announced plans to build a 20-megawatt solar photovoltaic project on an
36 80-acre parcel owned by Moloka'i Ranch. The project would be built out in phases and could
37 eventually meet 80% to 90% of Moloka'i's electrical energy needs.
38

¹² [Princeton Energy Group, 2013 Ikehu Moloka'i Presentation](#)

⁶ Hawaii Energy Fast Facts, November 2014; Hawaii State Energy Office · energy.hawaii.gov

1 **B. ISSUES**
2
3
4

- 5 Issue 1: Dependency on fossil fuels for electricity generation results in a lack of control
6 over costs and supply chain security. Accordingly, Moloka`i has some of the
7 highest electricity rates in the state and in the country.
8
- 9 Issues 2: Inability of the island's existing power grid to effectively handle intermittent energy
10 sources such as solar and wind power.
11
12

13 **C. GOAL, POLICIES, AND ACTIONS**
14

15
16 **GOAL** **Moloka`i will meet its energy needs through development of local clean re-**
17 **newable energy sources and implementation of energy efficiency and conser-**
18 **vation measures.**

19
20 **Policies**

- 21 1. Support accelerating development of alternative energy sources to help re-
22 duce dependency on oil and other fossil fuels.
23
- 24 2. Support increased use of environmentally friendly alternative fuels on Molo-
25 ka`i without degrading the environment. ~~such as ethanol, natural gas, bio-~~
26 ~~diesel, hydrogen, propane, food waste materials, and by products from feed~~
27 ~~and fiber production.~~
28
- 29 3. Support programs that provide incentives to use more efficient vehicles, ap-
30 pliances, lighting, and other energy consuming devices.
31
- 32 4. Encourage County services and facilities to be energy efficient and to utilize re-
33 newable energy where possible.
34
- 35 5. Ensure that main utility transmission lines are robust and resilient enough to
36 withstand severe storm effects. ~~hurricane forces winds.~~
37
- 38 6. Promote the under-grounding of utilities in new areas of development and in
39 existing areas where feasible.
40
- 41 7. Support development of micro-grids for critical infrastructure and key re-
42 sources.
43
- 44 8. Support alternative ownership options for Maui County's electric utility to pro-
45 vide more affordable and clean energy.

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9. Encourage amending the Maui County Building code that would recommend the use of energy conservation devices in both new construction and renovations.

Actions

No.	Action	Lead County Agency	Partners
8.6.01	Develop a Diversified Energy Strategy for Moloka`i that examines locations for large and small scale renewable energy systems.	Energy Office	State Energy Office, ECO
8.6.02	Create a smart grid that would allow for integration of additional renewable energy sources.	Energy Office	MECO
8.6.03	Provide loan programs and tax incentives to encourage individuals and businesses to install renewable energy systems and to use energy saving devices.	Energy Office	State Energy Office, MECO
8.6.04	Adopt an updated building code requiring increased use of energy conservation devices in both new construction and renovations.	DPW	Energy Office
8.6.05	Provide education on energy efficiency and conservation in elementary and secondary schools.	Energy Office	School District
8.6.04 6	Develop an ordinance that would require all new County buildings and facilities to achieve <u>specific energy efficiency standards such as</u> LEED certification.	DPW	State Energy Office
8.6.05 ⁷	<u>Encourage the use of electric vehicles. Support the installation of Photovoltaic (PV) charging stations throughout the Island.</u>	Energy Office	State Energy Office

6

1 **8.7 Telecommunications**

2
3
4

A. EXISTING CONDITIONS

5 The *Maui County General Plan 2030 Telecommunications Assessment* (January 2007) found that
6 wireless telephone and internet service deficiencies exist on Moloka`i due to the dispersed nature
7 of development. The study found that urbanized areas had moderate service coverage while the
8 non-urbanized areas had limited coverage. Another assessment conducted in 2012 by the State
9 of Hawaii Department of Commerce and Consumer Affairs indicated that Moloka`i residents were
10 dissatisfied with cable and internet service and pricing.¹³ At that time, system performance was
11 limited since it was provided by microwave feed from Lahaina rather than by undersea fiber optic
12 cable, even though much of the on-island distribution was by fiber cable. However, in 2013 Oce-
13 anic successfully negotiated a lease of existing undersea fiber optic cable and since then, down-
14 load speeds reportedly have improved¹⁴.

15
16
17

B. ISSUES

- 18 Issue 1: Limited access to high speed internet and telecommunications services presents
19 challenges for education, health care, and businesses.
20
21 Issue 2: There are dead spots on the island for cellular/mobile telephone service.
22
23

24 **C. GOAL, POLICIES, AND ACTIONS**

25
26
27

28 **GOAL** Moloka`i will have a robust, resilient, and reliable telecommunications net-
29 work.

30
31 **Policies:**

- 32 1. Encourage and support the expansion of the mobile cellular network.
33
34 2. Encourage and support the expansion of high speed internet services.
35
36 3. Ensure that all schools are provided high speed internet services.
37
38 4. Encourage increased telecommuting activities for residents.
39

¹³ *Community Ascertainment and Related Activities, Results as of 5/30/13*, State of Hawaii Department of Commerce and Consumer Affairs

¹⁴ "Oceanic Internet Upgrade", The Moloka`i Dispatch, July 22nd 2013, <http://themolokaidispatch.com/oceanic-internet-upgrade/>

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1 [4.5. Encourage cell tower installation and backup generators to be located out](#)
2 [of special flood hazard areas and tsunami inundation zones.](#)

3 4 **Actions**

5

No.	Action	Lead County Agency	Partners
8.7.01	Work with telecommunications providers to expand the coverage and provide more reliable service . increase the number of cell towers in order to provide more reliable service.	OED	Oceanic, Verizon
8.7.02	Work with internet providers to expand high speed internet service throughout the island.	OED	Oceanic, Verizon
8.7.03	Provide high speed internet at all county meeting facilities.	Parks Dept.	Oceanic, Verizon

6
7