

# 2

## Demand Estimates and Projections

This chapter summarizes the water demand estimates and projections for the Lower East Coast (LEC) Planning Area of the South Florida Water Management District (SFWMD or District) through the planning horizon (2021 to 2045). Estimates and projections are presented by water use category and were developed in coordination with various stakeholder groups, including agriculture, utilities, industry, local and tribal governments, and other interested groups. A detailed discussion of data collection and analyses methods is provided in **Appendix A**.

Current and future water demands in the LEC Planning Area are heavily influenced by existing and projected population. Population growth will lead to increases in water demands for public supply, landscape irrigation, power generation, and mining operations in the region. Demands associated with irrigated agriculture in the LEC Planning Area are anticipated to decrease due to conversion of farmland to residential developments and environmental restoration projects. The increased pace of population growth and economic expansion, which is projected to continue through 2045, places greater demands on regional water resources in the LEC Planning Area. According to estimates from the University of Florida's Bureau of Economic and Business Research (BEBR), the permanent population in the LEC Planning Area is expected to increase by more than 1 million people by 2045 (Rayer and Wang 2021).

### TOPICS

- ◆ Water Demand
- ◆ Water Use Categories
- ◆ Population Estimates and Projections
- ◆ Public Supply
- ◆ Domestic Self-Supply
- ◆ Agriculture
- ◆ Commercial/Industrial/Institutional
- ◆ Landscape/Recreational
- ◆ Power Generation
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### WATER DEMAND

Water demands can be described and analyzed in two ways: gross demand and net demand. Gross demand is the volume of water withdrawn or diverted from a groundwater or surface water source. This definition serves as the basis for water allocations established through water use permits issued by the SFWMD. Further information on water use permitting is provided in the *2021-2024 Support Document for Water Supply Plan Updates*

(2021-2024 Support Document; SFWMD 2021). Net demand refers to the volume of water delivered to end users after accounting for treatment losses and delivery system inefficiencies. For Public Supply (PS) and Domestic Self-Supply (DSS), demands commonly are referred to as raw and finished demands rather than gross and net demands, respectively. In this *2023 Lower East Coast Water Supply Plan Update (2023 LEC Plan Update)*, gross demand is equal to net demand for all water use categories except PS.

This 2023 LEC Plan Update presents demands for average rainfall and 1-in-10-year drought conditions (**Appendix A**). Section 373.709, Florida Statutes (F.S.), states the level-of-certainty planning goal associated with identifying water demands contained in water supply plans shall be based on meeting demands during 1-in-10-year drought conditions for at least a 20-year period. Although not quantified in this plan, environmental demands are addressed through resource protection criteria (**Chapter 4**).

## INFO ⓘ

### Average Rainfall and 1-in-10-Year Drought

An **average rainfall year** is defined as a year having rainfall with a 50% probability of being exceeded in any other year.

A **1-in-10-year-drought** is defined as a year in which below normal rainfall occurs with a 90% probability of being exceeded in any other year. It has an expected return frequency of once in 10 years.

## WATER USE CATEGORIES

Water demands for this 2023 LEC Plan Update are estimated in 5-year increments for the six water use categories listed below, which were established by the Florida Department of Environmental Protection (FDEP) in coordination with the state's water management districts. The water use category names and acronyms have been updated for this plan to align with other water supply planning efforts across the state.

- ◆ **Public Supply (PS)** – Potable water supplied by water treatment plants with a current allocation of 0.10 million gallons per day (mgd) or greater.
- ◆ **Domestic Self-Supply (DSS)** – Potable water used by households served by small utilities (less than 0.10 mgd) or self-supplied by private wells.
- ◆ **Agriculture (AG)** – Self-supplied water used for commercial crop irrigation, greenhouses, nurseries, livestock watering, pasture irrigation, and aquaculture.
- ◆ **Commercial/Industrial/Institutional (CII)** – Self-supplied water associated with the production of goods or provision of services by commercial, industrial, or institutional establishments.
- ◆ **Landscape/Recreational Irrigation (L/R)** – Self-supplied and reclaimed water used to irrigate golf courses, sports fields, parks, cemeteries, and large common areas such as land managed by homeowners' associations and commercial developments.
- ◆ **Power Generation (PG)** – Self-supplied and reclaimed water used for cooling, potable, and process water by power generation facilities.

**Table 2-1** presents a comparison of the estimated (2021) and projected (2045) average gross water demands, by category, in the LEC Planning Area. The largest water use category is PS, followed by AG, L/R, CII, PG, and DSS. PS demands reflect the regional population growth over the planning horizon, while AG demands decrease primarily due to conversion of agricultural land to other uses. An overall increase in total demands is projected through the planning horizon.


Table 2-1. Estimated (2021) and projected (2045) average gross water demands (in mgd) for the LEC Planning Area by use category.

Water Use Category	2021	2045
Public Supply	889.64	1,046.52
Domestic Self-Supply	9.98	13.59
Agriculture	645.20	637.65
Commercial/Industrial/Institutional	87.35	102.56
Landscape/Recreational	178.65	199.18
Power Generation	42.20	62.33
<b>LEC Planning Area Total</b>	<b>1,853.02</b>	<b>2,061.83</b>

LEC = Lower East Coast; mgd = million gallons per day.

## POPULATION ESTIMATES AND PROJECTIONS

Population estimates and projections were used to develop demands for all water use categories except AG and PG. Developing population estimates and projections required multiple sources of information, including county-level data from the University of Florida’s BEBR (Rayer and Wang 2021), consistent with Section 373.709(2)(a), F.S., data from the 2020 Decennial Census (United States Census Bureau 2020), and data from local government Comprehensive Plans. **Appendix A** provides further details on the development of population estimates and projections. Draft results were presented to the region’s PS utilities to ensure accuracy and obtain agreement with final 2045 population projections in the plan update.

**NOTE** 

All population estimates and projections are for permanent residents, as defined by the United States Census Bureau. However, the per capita use rate, which is used to calculate water demands, reflects use by seasonal residents as well.

In 2021, the estimated population within the LEC Planning Area was 6,222,708 permanent residents (**Table 2-2**). BEBR projections indicate the LEC Planning Area population will grow to 7,294,265 permanent residents in 2045, an increase of approximately 17%. Nearly half of the LEC Planning Area population resides in Miami-Dade County, while Broward County accounts for approximately one-third followed by Palm Beach County with less than a quarter, and this trend is expected to continue. As explained in **Appendix A**, BEBR medium projections were used for all counties to develop detailed population projections for PS utilities and county DSS areas (Rayer and Wang 2021).

Table 2-2. Permanent resident population served by PS and DSS in the LEC Planning Area in 2021 and 2045.

County	2021 Population			2045 Population		
	PS	DSS	Total	PS	DSS	Total
Broward <sup>a</sup>	1,944,306	7,331	<b>1,951,637</b>	2,232,016	5,784	<b>2,237,800</b>
Hendry <sup>a,b</sup>	948	3,933	<b>4,881</b>	1,729	3,357	<b>5,086</b>
Miami-Dade	2,693,688	9,052	<b>2,702,740</b>	3,179,658	33,021	<b>3,212,679</b>
Monroe	78,267	0	<b>78,267</b>	80,200	0	<b>80,200</b>
Palm Beach	1,436,386	48,797	<b>1,485,183</b>	1,705,025	53,475	<b>1,758,500</b>
<b>LEC Planning Area Total</b>	<b>6,153,595</b>	<b>69,113</b>	<b>6,222,708</b>	<b>7,198,628</b>	<b>95,638</b>	<b>7,294,265</b>

DSS = Domestic Self-Supply; LEC = Lower East Coast; PS = Public Supply.

<sup>a</sup> The Seminole Tribe of Florida is a sovereign Indian Tribe and an independent Tribal Government separate from Broward and Hendry counties. However, for discussion purposes, information relating to the Seminole Tribe of Florida Hollywood Reservation and the Seminole Tribe of Florida Big Cypress Basin Reservation is included in the calculations for Broward and Hendry counties, respectively.

<sup>b</sup> Values listed for Hendry County are only for the areas within the LEC Planning Area boundaries.

## PUBLIC SUPPLY

The PS category includes potable water supplied by water treatment plants with a current allocation of 0.10 mgd or greater. Developing PS demand projections in the LEC Planning Area was a multistep process that included determining utility service area and DSS populations, calculating per capita use rates (PCURs), and projecting future water needs.

### NOTE

Perceived discrepancies in table totals are due to rounding.

## Per Capita Use Rates

For each PS utility, a net (finished) water PCUR was developed using past population estimates and finished water data as reported to the FDEP. The PCUR for each utility is a 5-year (2017 through 2021) average, calculated by dividing annual net (finished) water volumes by the corresponding service area populations for each year. For PS demand projections, PCURs were assumed to remain constant through 2045. To calculate gross (raw) demands, the treatment efficiency for each utility, based on treatment process type(s) expected in 2045, was applied as a finished-to-raw ratio. Any demand reductions due to historical conservation practices are implicitly factored into the projections by using the 5-year average PCUR. Future water conservation savings (**Chapter 3**) were not factored into the demand projections used in this plan update due to water savings uncertainties. PS service area and water treatment plant maps are provided in **Appendix A**. Utility profiles containing population and finished water use data and projections as well as permitted allocations are provided in **Appendix B**.

## PS Demand Estimates and Projections

**Tables 2-3 and 2-4** present PS gross (raw) and net (finished) water demands, respectively, in 5-year increments by county. The results indicate PS gross (raw) water demands will increase 18%, from 889.64 mgd in 2021 to 1,046.52 mgd in 2045, under average rainfall conditions. Calculation of 1-in-10-year demand is based only on the outdoor portion of PS use, and the methodology is explained in **Appendix A**.

Table 2-3. PS gross (raw) water demands in the LEC Planning Area by county.

County	Gross (Raw) Demand – Average Rainfall Conditions (mgd)							2045 1-in-10-Year Demand
	2020	2021	2025	2030	2035	2040	2045	
Broward <sup>a</sup>	238.41	241.15	249.68	263.59	271.75	279.36	285.95	314.55
Hendry <sup>a,b</sup>	0.26	0.28	0.36	0.42	0.43	0.48	0.56	0.59
Miami-Dade	375.77	377.83	390.66	406.15	420.69	434.20	446.30	477.54
Monroe	19.20	19.31	19.44	19.59	19.69	19.74	19.79	20.38
Palm Beach	249.32	251.07	259.96	269.94	278.90	286.35	293.92	323.32
<b>LEC Planning Area Total</b>	<b>882.96</b>	<b>889.64</b>	<b>920.10</b>	<b>959.70</b>	<b>991.47</b>	<b>1,020.13</b>	<b>1,046.52</b>	<b>1,136.37</b>

LEC = Lower East Coast; mgd = million gallons per day; PS = Public Supply.

<sup>a</sup> The Seminole Tribe of Florida is a sovereign Indian Tribe and an independent Tribal Government separate from Broward and Hendry counties. However, for discussion purposes, information relating to the Seminole Tribe of Florida Hollywood Reservation and the Seminole Tribe of Florida Big Cypress Basin Reservation is included in the calculations for Broward and Hendry counties, respectively.

<sup>b</sup> Values listed for Hendry County are only for the areas within the LEC Planning Area boundaries.

Table 2-4. PS net (finished) water demands in the LEC Planning Area by county.

County	Net (Finished) Demand – Average Rainfall Conditions (mgd)							2045 1-in-10-Year Demand
	2020	2021	2025	2030	2035	2040	2045	
Broward <sup>a</sup>	215.40	217.86	225.33	233.79	240.97	247.58	253.35	278.68
Hendry <sup>a,b</sup>	0.25	0.27	0.35	0.41	0.42	0.47	0.54	0.57
Miami-Dade	346.62	348.59	360.48	374.66	388.04	400.47	411.54	440.35
Monroe	18.29	18.39	18.52	18.66	18.75	18.80	18.85	19.41
Palm Beach	220.68	222.41	230.24	239.01	247.04	253.65	260.43	286.47
<b>LEC Planning Area Total</b>	<b>801.24</b>	<b>807.52</b>	<b>834.91</b>	<b>866.54</b>	<b>895.22</b>	<b>920.97</b>	<b>944.70</b>	<b>1,025.48</b>

LEC = Lower East Coast; mgd = million gallons per day; PS = Public Supply.

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<sup>b</sup> Values listed for Hendry County are only for the areas within the LEC Planning Area boundaries.

## DOMESTIC SELF-SUPPLY

The DSS category includes potable water used by households that are served by small utilities with water withdrawals less than 0.10 mgd or that are self-supplied by private wells. Permanent resident populations within DSS areas were developed simultaneously with the PS population estimates and projections. All permanent residents outside of PS utility service area boundaries were considered DSS population. Population projection methodology and results are provided in the previous section and further described in **Appendix A**.

**Table 2-5** contains the LEC Planning Area DSS demand estimates and projections under average rainfall conditions. The average PCUR of PS utilities in each county was used to calculate DSS demands. For DSS demands, the finished-to-raw water ratio is assumed to be 1.00. Therefore, no distinction is made between gross (raw) and net (finished) water demands. Average estimated DSS demands in 2021 were 9.98 mgd for 69,113 permanent residents (**Table 2-2**). DSS demands are expected to increase 36% by 2045. This increase can be attributed to high anticipated growth in DSS areas without expansion of PS utility service within those areas.

Table 2-5. DSS gross (raw) water demands in the LEC Planning Area by county.

County	Gross (Raw) Demand – Average Rainfall Conditions (mgd)							2045 1-in-10-Year Demand
	2020	2021	2025	2030	2035	2040	2045	
Broward <sup>a</sup>	0.90	0.82	0.88	0.85	0.77	0.74	0.65	0.71
Hendry <sup>a,b</sup>	0.37	0.37	0.36	0.35	0.33	0.32	0.31	0.33
Miami-Dade	2.64	1.18	2.06	2.61	3.00	3.24	4.29	4.59
Monroe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Palm Beach	7.20	7.61	8.28	8.59	8.75	8.97	8.34	9.18
<b>LEC Planning Area Total</b>	<b>11.11</b>	<b>9.98</b>	<b>11.58</b>	<b>12.40</b>	<b>12.85</b>	<b>13.27</b>	<b>13.59</b>	<b>14.81</b>

DSS = Domestic Self-Supply; LEC = Lower East Coast; mgd = million gallons per day.

<sup>a</sup> The Seminole Tribe of Florida is a sovereign Indian Tribe and an independent Tribal Government separate from Broward and Hendry counties. However, for discussion purposes, information relating to the Seminole Tribe of Florida Hollywood Reservation and the Seminole Tribe of Florida Big Cypress Basin Reservation is included in the calculations for Broward and Hendry counties, respectively.

<sup>b</sup> Values listed for Hendry County are only for the areas within the LEC Planning Area boundaries.

## AGRICULTURE



Agricultural Land in Homestead

The AG category includes self-supplied water used for commercial crop irrigation, nurseries, greenhouses, livestock watering, pasture, and aquaculture. AG is the second largest water use category in the LEC Planning Area, accounting for 35% of the region’s total estimated water demand in 2021. Agricultural production in the LEC Planning Area is of regional and national significance, with 566,162 acres of crops under irrigation (**Figure 2-1**).

Agricultural acreage data published by the Florida Department of Agriculture and

Consumer Services (FDACS 2022) were used to determine water demands for this 2023 LEC Plan Update. Pursuant to Section 373.709(2)(a), F.S., water management districts are required to consider FDACS water demand projections. Any adjustments or deviations from the projections published by FDACS, “...must be fully described, and the original data must be presented along with the adjusted data.” A detailed description of the analyses and adjustments is provided in **Appendix A**.

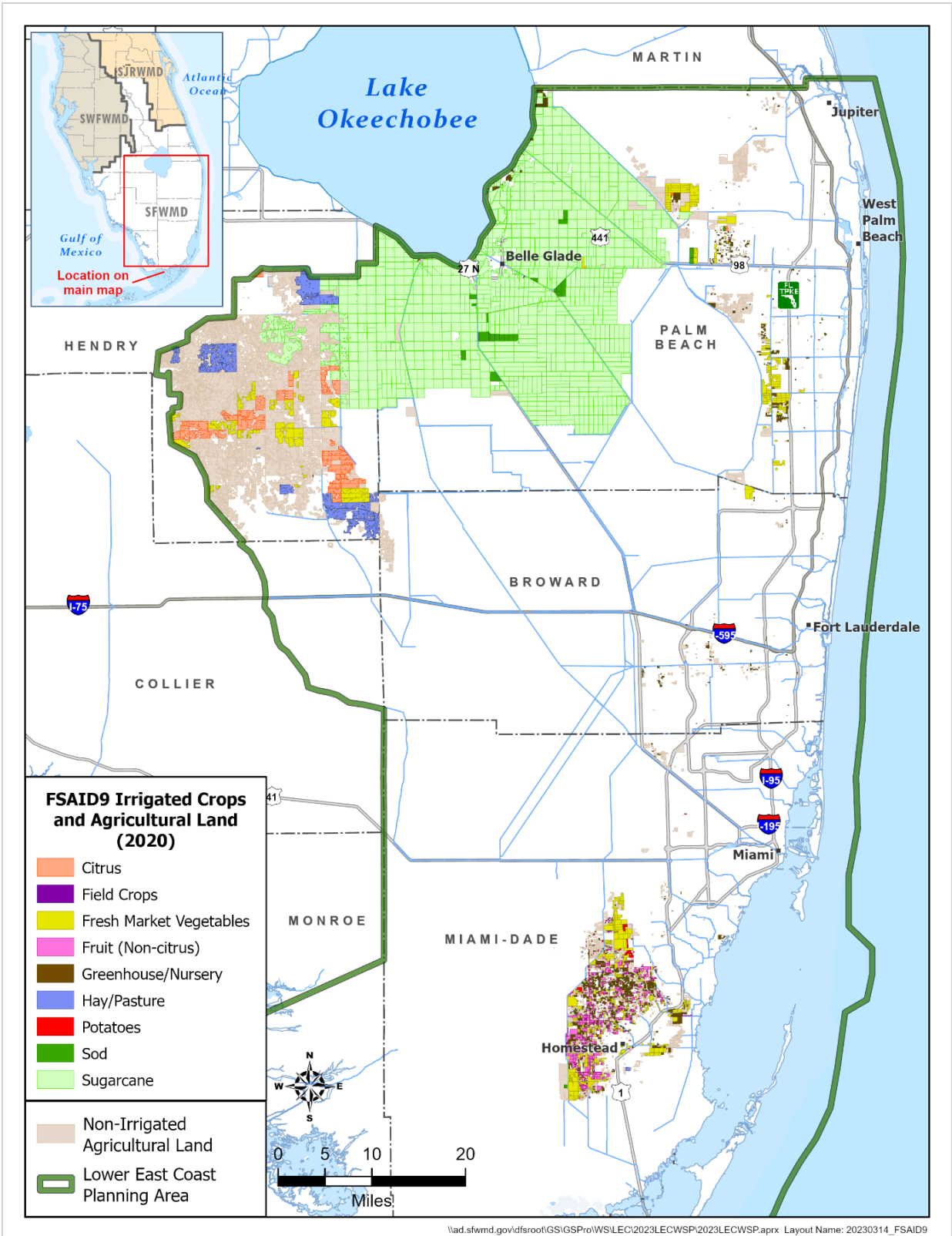


Figure 2-1. Agricultural irrigated land in the LEC Planning Area (Data from FDACS 2022).

Agricultural water demand was determined using the Agricultural Field Scale Irrigation Requirements Simulation (AFSIRS) model (Smajstrla 1990). No distinction was made between gross and net water demands. The FDACS irrigated crop acres, soil types, growing seasons, and irrigation methods were used as input data for the AFSIRS model. AG demand estimates and projections are based on the commercially grown crop categories in **Table 2-6**.

Table 2-6. Summary of average and 1-in-10-year water demands (in mgd) for all agricultural acreage, livestock, and aquaculture in the LEC Planning Area.

Crop	2021			2045		
	Acres	Average Demand	1-in-10-Year Demand	Acres	Average Demand	1-in-10-Year Demand
Sugarcane	454,157	479.74	661.75	442,922	467.71	645.13
Fresh Market Vegetables	40,102	41.44	49.17	39,362	40.33	47.93
Citrus	19,564	20.41	24.62	22,112	21.04	25.39
Hay/Pasture	19,795	23.53	28.15	20,253	24.07	28.80
Greenhouse/Nursery	15,016	40.27	43.60	12,841	33.92	36.79
Fruits (excluding citrus)	10,856	25.09	27.80	9,654	22.02	24.33
Sod	5,944	10.21	13.45	5,944	10.21	13.45
Potatoes	677	0.66	0.78	626	0.62	0.75
Field Crops	50	0.01	0.02	983	0.94	1.14
Livestock	N/A	0.64	0.64	N/A	0.64	0.64
Aquaculture	N/A	3.19	3.19	N/A	16.16	16.16
<b>LEC Planning Area Total</b>	<b>566,162</b>	<b>645.19</b>	<b>853.17</b>	<b>554,697</b>	<b>637.65</b>	<b>840.51</b>

LEC = Lower East Coast; mgd = million gallons per day.

Total irrigated acres are projected to remain relatively stable, declining approximately 2% by 2045. Sugarcane currently is the dominant crop in the LEC Planning Area, covering 454,157 acres (**Table 2-6**). More than 95% of the region’s sugarcane acreage and water demands are within the Everglades Agricultural Area, and the remainder is in Hendry County (**Appendix A**). Demands associated with the production of fresh market vegetables, citrus, greenhouse/nursery stock, fruits, and sod are much smaller than sugarcane; however, they account for a substantial amount of the remaining AG demands and are vital industries in terms of economic impact.

Relatively little change is anticipated in AG water demands for nearly all crops within the LEC Planning Area. Mirroring the projected changes in irrigated acreage, AG demands are projected to decrease in Palm Beach and Miami-Dade counties due to conversion of agricultural land to residential and other land uses. By 2045, AG demands in Miami-Dade County are projected to decrease by approximately 10%.

Overall, total AG gross water demands under average rainfall conditions in the LEC Planning Area are estimated to decrease approximately 1%, from 645.20 mgd in 2021 to 637.65 mgd

**INFO** ⓘ

Examples of crop categories used in this report include the following:

**Fresh Market Vegetables:**

- ◆ Tomatoes
- ◆ Green beans
- ◆ Sweet corn
- ◆ Peppers
- ◆ Melons

**Fruits (excluding citrus):**

- ◆ Avocados
- ◆ Mangos



in 2045 (**Table 2-7**). These totals include demands from livestock and aquaculture in addition to the demands from crop irrigation shown in **Table 2-7**.

Table 2-7. AG gross water demands for all agricultural acreage, livestock, and aquaculture in the LEC Planning Area by county.

County	Gross Demand – Average Rainfall Conditions (mgd)							2045 1-in-10-Year Demand
	2020	2021	2025	2030	2035	2040	2045	
Broward <sup>a</sup>	2.90	2.82	2.65	2.43	2.23	2.04	1.85	2.13
Hendry <sup>a,b</sup>	104.73	105.05	106.01	107.74	109.79	110.98	110.76	141.57
Miami-Dade	73.98	73.03	84.11	81.51	78.87	75.86	73.20	79.20
Monroe	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03
Palm Beach	470.51	464.28	451.83	451.83	451.83	451.83	451.82	617.58
<b>LEC Planning Area Total</b>	<b>652.14</b>	<b>645.20</b>	<b>644.62</b>	<b>643.53</b>	<b>642.74</b>	<b>640.73</b>	<b>637.65</b>	<b>840.52</b>

AG = Agriculture; LEC = Lower East Coast; mgd = million gallons per day.

<sup>a</sup> The Seminole Tribe of Florida is a sovereign Indian Tribe and an independent Tribal Government separate from Broward and Hendry counties. However, for discussion purposes, information relating to the Seminole Tribe of Florida Hollywood Reservation and the Seminole Tribe of Florida Big Cypress Basin Reservation is included in the calculations for Broward and Hendry counties, respectively.

<sup>b</sup> Values listed for Hendry County are only for the areas within the LEC Planning Area boundaries.

## COMMERCIAL/INDUSTRIAL/INSTITUTIONAL

The CII water use category includes water demands associated with commercial and industrial operations for processing, manufacturing, and technical needs such as concrete, citrus processing, and mining operations. CII demands only include self-supplied users and do not include commercial or industrial users that receive water from PS utilities; those users are included in the PS category. All CII demand estimates and projections are presumed to be the same for average rainfall and 1-in-10-year drought conditions, and withdrawal demand is assumed to be equal to user demand. Therefore, no distinction is made between gross and net water demands. Growth within the CII category is expected to be driven by regional population growth. Estimated CII demands for 2021 were 87.35 mgd, with projected growth resulting in demands of 102.56 mgd in 2045 (**Table 2-8**).

Table 2-8. CII gross water demands in the LEC Planning Area by county.

County	Gross Demand (mgd)						
	2020	2021	2025	2030	2035	2040	2045
Broward <sup>a</sup>	2.82	2.85	2.94	3.04	3.13	3.20	3.27
Hendry <sup>a,b</sup>	1.69	1.69	1.69	1.69	1.69	1.69	1.69
Miami-Dade	73.25	73.92	75.92	79.02	81.91	84.56	87.09
Monroe	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Palm Beach	8.77	8.89	9.24	9.64	9.98	10.27	10.52
<b>LEC Planning Area Total</b>	<b>86.53</b>	<b>87.35</b>	<b>89.79</b>	<b>93.39</b>	<b>96.70</b>	<b>99.72</b>	<b>102.56</b>

CII = Commercial/Industrial/Institutional; LEC = Lower East Coast; mgd = million gallons per day.

<sup>a</sup> The Seminole Tribe of Florida is a sovereign Indian Tribe and an independent Tribal Government separate from Broward and Hendry counties. However, for discussion purposes, information relating to the Seminole Tribe of Florida Hollywood Reservation and the Seminole Tribe of Florida Big Cypress Basin Reservation is included in the calculations for Broward and Hendry counties, respectively.

<sup>b</sup> Values listed for Hendry County are only for the areas within the LEC Planning Area boundaries.

# LANDSCAPE/RECREATIONAL

L/R is the third largest water use category in the LEC Planning Area, encompassing irrigation of golf courses and other landscaped areas such as parks, sports fields, and common areas of residential developments. L/R demands are met with the use of groundwater, surface water, and reclaimed water. L/R acreages reflect only the acres under water use permits and do not include acres irrigated solely with reclaimed water that do not have a water use permit for a supplemental or backup supply. For L/R, acreage and demands are disaggregated into landscape and golf irrigation subcategories. Details regarding development of the L/R demands are provided in **Appendix A**.

Within the L/R category in 2021, 49,998 permitted acres were attributed to landscape irrigation. These landscaped areas are expecting growth of 17% to 58,466 acres by 2045. In 2021, there were 159 golf courses irrigating 21,032 acres under water use permits in the LEC Planning Area (SFWMD 2023), and this is projected to increase by 315 acres by 2045.

Under average rainfall conditions, total estimated L/R gross water demands are projected to increase from 178.65 mgd in 2021 to 199.18 mgd in 2045 (**Table 2-9**). Groundwater and surface water supply sources met approximately 74% of the 2021 L/R water demands, with reclaimed water supplementing the remaining 26%. The ratio of reclaimed water to groundwater/surface water used to meet future landscape demands is assumed to remain constant through 2045. Golf course acreage is projected to remain relatively stable over the planning period and, as a result, water demand for golf is held relatively constant over the planning horizon, with a slight increase in Palm Beach County. Reclaimed water use accounts for 26% of the water use for golf courses. See **Chapter 5** for a discussion of reclaimed water as an alternative water supply source.

Table 2-9. L/R gross water demands (in mgd) in the LEC Planning Area.

Land Use	Demand – Average Rainfall Conditions (mgd)							2045 1-in-10-Year Demand
	2020	2021	2025	2030	2035	2040	2045	
Broward County <sup>a</sup>								
Landscape	33.25	33.60	34.65	35.86	36.87	37.74	38.52	48.54
Golf	11.80	11.80	11.80	11.80	11.80	11.80	11.80	15.34
<b>Broward County Total</b>	<b>45.05</b>	<b>45.40</b>	<b>46.45</b>	<b>47.66</b>	<b>48.67</b>	<b>49.54</b>	<b>50.32</b>	<b>63.88</b>
Hendry County <sup>a,b</sup>								
Landscape	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Golf	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Hendry County Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Miami-Dade County								
Landscape	11.13	11.23	11.54	12.01	12.45	12.85	13.23	16.67
Golf	3.51	3.51	3.51	3.51	3.51	3.51	3.51	4.56
<b>Miami-Dade County Total</b>	<b>14.64</b>	<b>14.74</b>	<b>15.05</b>	<b>15.52</b>	<b>15.96</b>	<b>16.36</b>	<b>16.74</b>	<b>21.23</b>
Monroe County								
Landscape	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.15
Golf	2.36	2.36	2.36	2.36	2.36	2.36	2.36	3.07
<b>Monroe County Total</b>	<b>2.58</b>	<b>2.58</b>	<b>2.58</b>	<b>2.58</b>	<b>2.58</b>	<b>2.58</b>	<b>2.58</b>	<b>3.22</b>

Table 2-9. Continued.

Land Use	Demand – Average Rainfall Conditions (mgd)							2045 1-in-10-Year Demand
	2020	2021	2025	2030	2035	2040	2045	
<b>Palm Beach County</b>								
Landscape	67.93	68.84	71.56	74.68	77.29	79.53	81.45	102.63
Golf	47.09	47.09	47.59	48.09	48.09	48.09	48.09	62.52
<b>Palm Beach County Total</b>	<b>115.02</b>	<b>115.93</b>	<b>119.15</b>	<b>122.77</b>	<b>125.38</b>	<b>127.62</b>	<b>129.54</b>	<b>165.14</b>
<b>LEC Planning Area Total</b>								
<b>Landscape</b>	<b>112.53</b>	<b>113.89</b>	<b>117.97</b>	<b>122.77</b>	<b>126.83</b>	<b>130.34</b>	<b>133.42</b>	<b>167.98</b>
<b>Golf</b>	<b>64.76</b>	<b>64.76</b>	<b>65.26</b>	<b>65.76</b>	<b>65.76</b>	<b>65.76</b>	<b>65.76</b>	<b>85.49</b>
<b>LEC Planning Area Total</b>	<b>177.29</b>	<b>178.65</b>	<b>183.23</b>	<b>188.53</b>	<b>192.59</b>	<b>196.10</b>	<b>199.18</b>	<b>253.47</b>

L/R = Landscape/Recreational; LEC = Lower East Coast; mgd = million gallons per day.

<sup>a</sup> The Seminole Tribe of Florida is a sovereign Indian Tribe and an independent Tribal Government separate from Broward and Hendry counties. However, for discussion purposes, information relating to the Seminole Tribe of Florida Hollywood Reservation and the Seminole Tribe of Florida Big Cypress Basin Reservation is included in the calculations for Broward and Hendry counties, respectively.

<sup>b</sup> Values listed for Hendry County are only for the areas within the LEC Planning Area boundaries.

## POWER GENERATION

Demands under the PG category include use of groundwater, fresh surface water, or reclaimed water by thermoelectric power generation facilities. PG demands do not include the use of brackish surface water and cooling water returned to its withdrawal source, harvested rainfall, or seawater. Demands under average rainfall and 1-in-10-year drought conditions are assumed to be equal in the PG category; no distinction is made between gross and net water demands.

There are 12 power generation facilities operating in the LEC Planning Area (**Figure 2-2**). However, only seven of these facilities have demands on groundwater, fresh surface water, or reclaimed water that are addressed in this plan update: Florida Power & Light (FPL) Riviera Beach Next Generation Clean Energy Center, FPL Turkey Point Plant, FPL West County Energy Center, Homestead G.W. Ivey Power Plant, Miami-Dade County Resources Recovery Facility, Okeelanta Cogeneration Facility, and Palm Beach County Solid Waste Authority Renewable Energy Park.

No new power generation facilities requiring water supply are planned for construction or operation through 2045. New solar power facilities are in development, but these do not have water demands. However, PG demands are projected to increase by 20.13 mgd from 2021 to 2045 (**Table 2-10**) mainly due to increased use at the FPL Turkey Point Plant. Other than the Turkey Point Plant, the other six facilities with water supply demands are projected to remain relatively stable over the planning period. All PG demand estimates and projections are presumed to be the same for average rainfall and 1-in-10-year drought conditions.

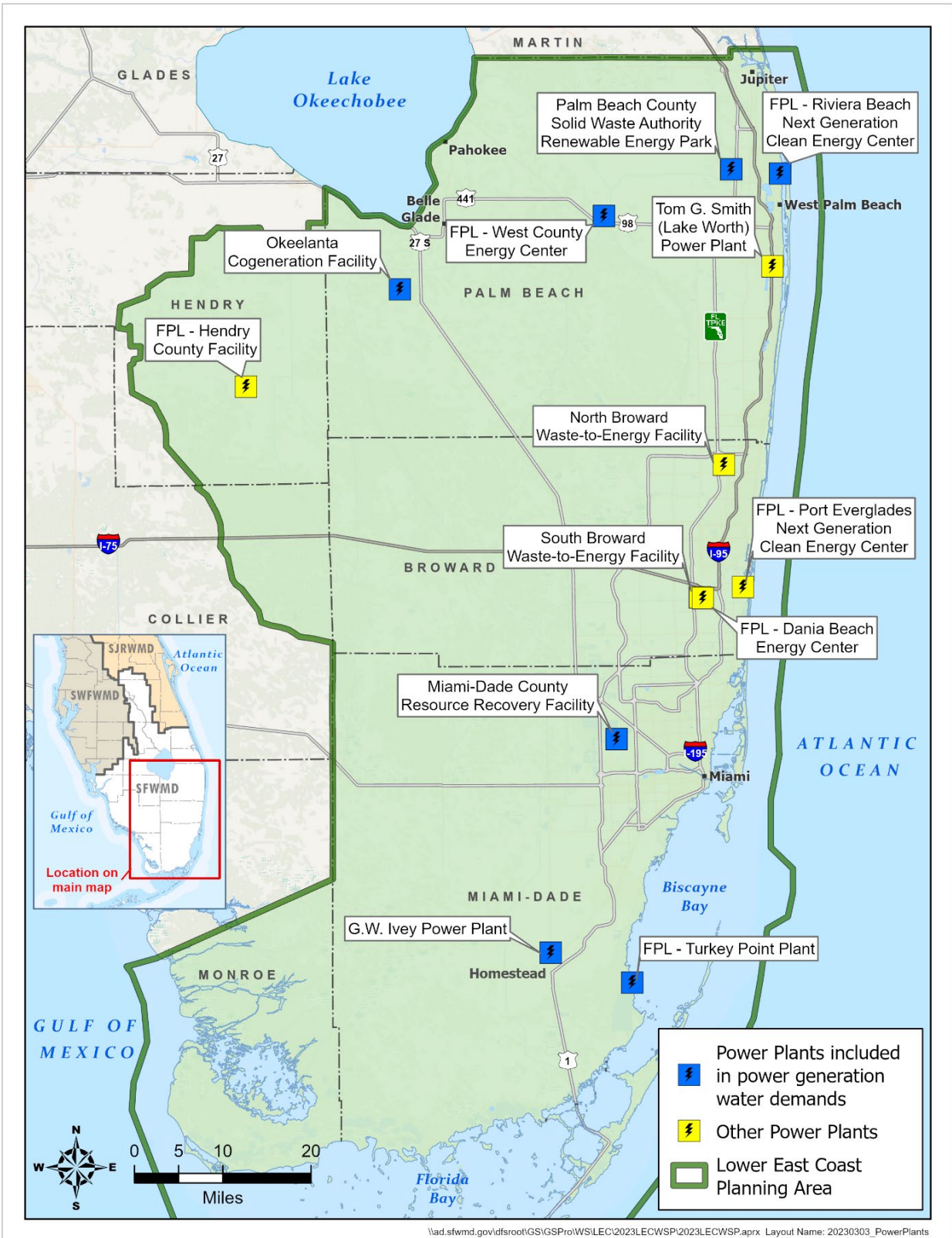


Figure 2-2. Power Generation facilities in the LEC Planning Area.

Table 2-10. PG water demands in the LEC Planning Area.

Facilities	Gross Demand (mgd) <sup>a</sup>						
	2020	2021	2025	2030	2035	2040	2045
FPL – Riviera Beach Clean Energy Center	0.09	0.02	0.10	0.10	0.10	0.10	0.10
FPL – Turkey Point Plant <sup>b,c</sup>	17.49	21.86	42.60	42.60	42.60	42.60	42.60
FPL – West County Energy Center <sup>d</sup>	13.02	14.22	13.53	13.53	13.53	13.53	13.53
Homestead G.W. Ivey Power Plant	1.40	1.40	1.40	1.40	1.40	1.40	1.40
Miami-Dade County Resources Recovery Facility	1.76	1.76	1.76	1.76	1.76	1.76	1.76
Okeelanta Cogeneration Facility	1.17	1.17	1.17	1.17	1.17	1.17	1.17
Palm Beach County SWA Renewable Energy Park	1.08	1.77	1.77	1.77	1.77	1.77	1.77
<b>LEC Planning Area Total</b>	<b>36.01</b>	<b>42.20</b>	<b>62.33</b>	<b>62.33</b>	<b>62.33</b>	<b>62.33</b>	<b>62.33</b>

FPL = Florida Power & Light; LEC = Lower East Coast; mgd = million gallons per day; PG = Power Generation; SWA = Solid Waste Authority.

<sup>a</sup> Includes groundwater from the surficial and Floridan aquifer systems, reclaimed water, and surface water; Does not include harvested rainwater, seawater, city water, or surface water returned to the source.

<sup>b</sup> The Turkey Point Plant has backup Upper Floridan aquifer system supply of 12.6 mgd if needed to make up reclaimed water shortfall.

<sup>c</sup> FPL and Miami-Dade Water and Sewer Department are evaluating future use of reclaimed water at the Turkey Point Plant.

<sup>d</sup> The West County Energy Center has backup allocation from the Upper Floridan aquifer system and surface water from the L-10/L-12 canals to make up the shortfall of reclaimed water (29.28 mgd) starting after 2021.

## SUMMARY OF DEMAND ESTIMATES AND PROJECTIONS

Total gross water demands under average rainfall conditions in the LEC Planning Area are projected to be 2,061.83 mgd by 2045, an 11% increase from 2021 demands (1,853.02 mgd). **Table 2-11** provides 5-year incremental summaries of gross demands for all water use categories in the LEC Planning Area under average rainfall and 1-in-10-year drought conditions. Gross demands under average rainfall conditions are used to demonstrate projected trends, including the following key highlights:

- ◆ PS and DSS average gross (raw) demands combined are expected to increase 18% from 899.62 mgd in 2021 to 1,060.11 mgd in 2045. PS will remain the largest water use category in the LEC Planning Area.
- ◆ AG average gross demands are projected to decrease from 645.20 mgd in 2021 to 637.65 mgd by 2045. This reduction is primarily due to the conversion of farmland in Palm Beach and Miami-Dade counties to other uses. AG will remain the second largest water use category in the LEC Planning Area through 2045.
- ◆ CII gross demands are projected to increase by 15.21 mgd over the planning period. The projected demand growth is related to regional population growth.
- ◆ L/R demands are projected to increase by 20.53 mgd over the planning period due to expansion of landscaped areas commensurate with population growth. Golf course acres are expected to remain relatively stable from 2021 to 2045.
- ◆ PG demands are projected to increase from 42.20 mgd in 2021 to 62.33 mgd in 2025 and then remain stable up to 2045.

Table 2-11. Summary of gross water demands under average rainfall and 1-in-10-year drought conditions in the LEC Planning Area by water use category.

Water Use Category	2020	2021	2025	2030	2035	2040	2045
Demand – Average Rainfall Conditions (mgd)							
PS	882.96	889.64	920.10	959.70	991.47	1,020.13	1,046.52
DSS	11.11	9.98	11.58	12.39	12.85	13.26	13.59
AG	652.14	645.20	644.61	643.52	642.73	640.72	637.65
CII	86.53	87.35	89.79	93.39	96.70	99.72	102.56
L/R	177.29	178.65	183.23	188.53	192.59	196.10	199.18
PG	36.01	42.20	62.33	62.33	62.33	62.33	62.33
<b>LEC Planning Area Total</b>	<b>1,846.04</b>	<b>1,853.02</b>	<b>1,911.64</b>	<b>1,959.86</b>	<b>1,998.67</b>	<b>2,032.26</b>	<b>2,061.83</b>
Demand – 1-in-10-Year Drought Conditions (mgd)							
PS	958.62	965.90	999.01	1,042.09	1,076.60	1,107.71	1,136.37
DSS	12.13	10.92	12.66	13.54	14.03	14.48	14.81
AG	862.50	853.17	847.87	846.90	846.10	844.00	840.51
CII	86.53	87.35	89.79	93.39	96.70	99.72	102.56
L/R	225.99	227.70	233.48	240.18	245.17	249.58	253.47
PG	36.01	42.20	62.33	62.33	62.33	62.33	62.33
<b>LEC Planning Area Total</b>	<b>2,181.78</b>	<b>2,187.24</b>	<b>2,245.14</b>	<b>2,298.43</b>	<b>2,340.93</b>	<b>2,377.82</b>	<b>2,410.06</b>

AG = Agriculture; CII = Commercial/Industrial/Institutional; DSS = Domestic Self-Supply; L/R = Landscape Recreational; LEC = Lower East Coast; mgd = million gallons per day; PG = Power Generation; PS = Public Supply.

## DEMAND PROJECTIONS IN PERSPECTIVE

Demand projections presented in this 2023 LEC Plan Update are based on the best available information. **Table 2-12** shows the 2040 average gross demands projected in the *2018 Lower East Coast Water Supply Plan Update* (SFWMD 2018) compared to the 2045 demands projected in this 2023 LEC Plan Update. The projections reflect trends, economic circumstances, and industry intentions that will change over time. Like any predictive tool based on past assumptions, there is uncertainty and a margin for error. Although the estimated total demand is for 5 years later, the projection for 2045 in this 2023 LEC Plan Update is 3% more than the estimated 2040 demand projected in the *2018 Lower East Coast Water Supply Plan Update* (SFWMD 2018).

Table 2-12. Comparison of gross water demands under average rainfall conditions at the end of the respective planning horizons in the 2018 LEC Plan Update and this 2023 LEC Plan Update.

Water Use Category	2018 LEC Plan Update	2023 LEC Plan Update	Percent Difference
	2040 Demand (mgd)	2045 Demand (mgd)	
Public Supply	1,089.34	1,046.52	-4%
Domestic Self-Supply	15.76	13.59	-14%
Agriculture	625.27	637.65	2%
Commercial/Industrial/Institutional	66.96	102.56	42%
Landscape/Recreational	156.46	199.18	24%
Power Generation	52.75	62.33	17%
<b>LEC Planning Area Total</b>	<b>2,006.54</b>	<b>2,061.83</b>	<b>3%</b>

LEC = Lower East Coast; mgd = million gallons per day.

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