

Table 4.1 Relative sea level rise (RSLR) modeled using SLRRP.

	Low Range	High Range
Galveston, Texas	117 cm (3.8 feet)	161 cm (5.3 feet)
Grand Isle, Louisiana	160 cm (5.2 feet)	199 cm (6.5 feet)
Pensacola, Florida	70 cm (2.3 feet)	114 cm (3.8 feet)

Table 4.2 Relative sea level rise (RSLR) modeled using CoastClim.

	Projected Subsidence by 2100	RSLR, B1-Low Range	Subsidence, Percent of Low Range	RSLR, A1F1-High Range	Subsidence, Percent of High Range
Galveston, Texas	51.7 cm (1.7 feet)	72 cm (2.4 feet)	71.8%	130 cm (4.3 feet)	39.7%
Grand Isle, Louisiana	88.6 cm (2.9 feet)	109 cm (3.5 feet)	81.3%	167 cm (5.5 feet)	53.0%
Pensacola, Florida	3.7 cm (0.12 feet)	24 cm (0.8 feet)	15.4%	82 cm (2.7 feet)	4.5%

Table 4.3 Relative sea level rise impacts on Gulf Coast transportation modes: percentage of facilities vulnerable.

Relative Sea Level Rise	Interstate Highways	Ports (Freight)	Rail Lines	Airports
61 cm (2 Feet)	19%	64%	5%	1 airport
122 cm (4 Feet)	24%	72%	9%	3 airports

Table 4.4 Storm surge impacts on Gulf Coast transportation modes: percentage of facilities vulnerable.

Storm Surge Height	Interstate Highways	Ports (Freight and Nonfreight)	Rail Lines	Airports
5.5 m (18 Feet)	56%	98%	33%	22 airports
7.0 m (23 Feet)	64%	99%	41%	29 airports

Table 4.5 Relative sea level rise impacts on highways: percentage of facilities vulnerable.

Relative Sea Level Rise	Arterials	Interstates	Intermodal Connectors
61 cm (2 Feet)	20%	19%	23%
122 cm (4 Feet)	28%	24%	43%

Table 4.6 Storm surge impacts on highways: percentage of facilities vulnerable.

Storm Surge Height	Arterials	Interstates	Intermodal Connectors
5.5 m (18 Feet)	51%	56%	73%
7.0 m (23 Feet)	57%	64%	73%

Table 4.7 Relative sea level rise impacts on rail: percentage of facilities vulnerable.

Relative Sea Level Rise	Rail Lines (track miles)	Rail Freight Facilities (94)	Rail Passenger Stations (21)
61 cm (2 Feet)	5%	12%	0
122 cm (4 Feet)	9%	20%	0

Table 4.8 Freight railroad-owned and served facilities in the Gulf Coast study region at elevation of 122 cm (4 feet) or less.

Name	Modal Access	City	State	Elevation (Feet)
KCS	Rail and truck	Metairie	Louisiana	< 0
Larsen Intermodal, Inc.	Rail and truck	Metairie	Louisiana	< 0
New Orleans Cold Storage and Warehouse, Ltd.	Rail and truck	Metairie	Louisiana	< 0
Port of Gulfport	Truck, port, rail	Gulfport	Mississippi	< 0
Port of Galveston	Truck, port, rail	Galveston	Texas	< 0
NS – New Orleans, Louisiana	Rail and truck	New Orleans	Louisiana	0-1
UP Intermodal Facility	Rail and truck	Avondale	Louisiana	0-1
Port of Freeport	Truck, port, rail	Freeport	Texas	0-1
Dry Storage Corporation of Louisiana	Rail and truck	Kenner	Louisiana	1-2
DSC Logistics	Rail and truck	Kenner	Louisiana	1-2
Yellow Terminal	Rail and truck	New Orleans	Louisiana	1-2
BNSF – New Orleans, Louisiana	Rail and truck	Westwego	Louisiana	2-3
BNSF 539 Bridge	Rail and truck	Westwego	Louisiana	2-3
BNSF Intermodal Facility	Rail and truck	New Orleans	Louisiana	2-3
Intermodal Cartage Company	Truck, port, rail	New Orleans	Louisiana	2-3
Transflo	Rail and truck	New Orleans	Louisiana	2-3
BNSF 101 Avonda	Rail and truck	Avondale	Louisiana	3-4
Downtown Transfer, Inc.	Rail and truck	Avondale	Louisiana	3-4
Port of New Orleans	Truck, port, rail	New Orleans	Louisiana	3-4

Table 4.9 Vulnerability from sea level rise and storm surge by rail distance and number of facilities.

Elevation Risk Gridcode	Ground Elevation (Feet)	Cumulative		
		Mileage of Railway Segments Vulnerable	Freight Facilities Vulnerable	Passenger Facilities Vulnerable
0 and 1	<1	86	8	0
2	1-2	146	11	0
3	2-3	191	16	0
4	3-4	267	19	0
5	4-5	412	22	0
6	5-18	966	40	9
7	18-23	1,190	51	12
8	>24	2,934	94	21

Table 4.10 Storm surge impacts on rail: percentage of facilities vulnerable.

Storm Surge Height	Rail Lines (Track Miles)	Rail Freight Facilities (94)	Rail Passenger Stations (21)
5.5 m (18 Feet)	33%	43%	43%
7.0 m (23 Feet)	41%	54%	57%

Table 4.11 Amtrak stations projected to be impacted by storm surge of 5.5 and 7.0 meters (18 and 23 feet).

Station	State	Amtrak Services
<i>5.5-Meter (18-Foot) Storm Surge</i>		
Mobile	Alabama	Sunset Limited ^a
Pascagoula	Mississippi	Sunset Limited ^a
Lake Charles	Louisiana	Sunset Limited
New Orleans	Louisiana	City of New Orleans, Crescent, Sunset Limited
Schriever	Louisiana	Sunset Limited
Slidell	Louisiana	Crescent
Beaumont	Texas	Sunset Limited
Galveston	Texas	Service by bus
La Marque	Texas	Service by bus
<i>7.0-Meter (23-Foot) Storm Surge</i>		
New Iberia	Louisiana	Sunset Limited
Bay St. Louis	Mississippi	Sunset Limited ^a
Biloxi	Mississippi	Sunset Limited ^a

^a Stations are currently inactive due to Hurricane Katrina.

Table 4.12 Relative sea level rise impacts on ports: percentage of facilities vulnerable.

Relative Sea Level Rise	Ports	
	Freight	Nonfreight
61 cm (2 Feet)	64%	68%
122 cm (4 Feet)	72%	73%

Table 4.13 Storm surge impacts on ports: percentage of facilities vulnerable.

Storm Surge Height	Ports (Freight and Nonfreight)
5.5 m (18 Feet)	98%
7.0 m (23 Feet)	99%

Table 4.14 FAA recommended runway lengths for hypothetical general aviation airport. (Federal Aviation Administration, Airport Design Version 4.2D, U.S. DOT)

Airport Data	
Airport Elevation	30
Maximum Difference in Runway Centerline Elevation (Feet)	1
Temperature (°F)	91.5
Runway Condition	Wet
Small Airplanes	
Small Airplanes with Approach Speeds of Less than 30 Knots	330
Small Airplanes with Approach Speeds of Less than 50 Knots	870
Small Airplanes with Less than 10 Passenger Seats	
75 Percent of these Small Airplanes	2,530
95 Percent of these Small Airplanes	3,100
100 Percent of these Small Airplanes	3,660
Small Airplanes with 10 or More Passenger Seats	4,290
Large Airplanes	
Large Airplanes of 60,000 Pounds ^a or Less	
75 Percent of these Large Airplanes at 60 Percent Useful Load	5,370
75 Percent of these Large Airplanes at 90 Percent Useful Load	7,000
100 Percent of these Large Airplanes at 60 Percent Useful Load	5,500
100 Percent of these Large Airplanes at 90 Percent Useful Load	8,520

^a Maximum takeoff weight.

Table 4.15 Summary of impacts of temperature change to runway length (general aviation) under three climate scenarios (SRES Scenarios A2, B1, and A1B). (Federal Aviation Administration (FAA) Airport Design Version 4.2D, U.S. DOT)

Analysis Category	Base Year	50 th Percentile					
		2050 Climate Scenarios			2100 Climate Scenarios		
		A2	B1	A1B	A2	B1	A1B
Possible Mean Maximum Temperature of Hottest Month (°F)	91.4	95.5	94.6	95.9	99.9	96.3	98.4
Runway Length Analysis by Aircraft Type		Runway Length (Feet)	Runway Length Percent Increase				
Small Airplanes with Less than 10 Passenger Seats							
75 Percent of these Small Airplanes	2,530	1.6%	1.2%	1.6%	3.2%	1.6%	2.8%
95 Percent of these Small Airplanes	3,100	1.3%	1.0%	1.6%	2.9%	1.6%	2.6%
100 Percent of these Small Airplanes	3,660	1.6%	1.1%	1.6%	3.3%	1.6%	2.7%
Small Airplanes with 10 or More Passenger Seats							
Large Airplanes of 60,000 Pounds or Less	4,290	1.6%	1.2%	1.9%	3.3%	1.9%	2.8%
Large Airplanes of 60,000 Pounds or Less							
75 Percent of these Large Airplanes at 60 Percent Useful Load	5,370	0.9%	0.7%	1.1%	2.4%	1.1%	2.0%
75 Percent of these Large Airplanes at 90 Percent Useful Load	7,000	2.1%	0.9%	2.7%	7.9%	2.7%	6.0%
100 Percent of these Large Airplanes at 60 Percent Useful Load	5,500	2.5%	1.6%	3.3%	8.0%	3.3%	6.2%
100 Percent of these Large Airplanes at 90 Percent Useful Load	8,520	6.8%	4.9%	7.9%	16.3%	7.9%	13.1%

Table 4.16 Commercial aircraft runway length takeoff requirements.

Aircraft Group	Aircraft Type ^a	Required Runway Length ^b	Commercial Service Airport Primary Runway Lengths (Feet)										
			EFD 9,001	IAH 12,001	HOB 7,602	BPT 6,750	MSY 10,104	LFT 7,651	BTR 7,004	LCH 6,500	MOB 8,521	GPT 9,002	HBG 6,099
Wide-Body	747-400	10,400	-1,399	1,601	-2,798	-3,650	-296	-2,749	-3,396	-3,900	-1,879	-1,398	-4,301
	MD 11	11,800	-2,799	201	-4,198	-5,050	-1,696	-4,149	-4,796	-5,300	-3,279	-2,798	-5,701
	777-200LR	11,500	-2,499	501	-3,898	-4,750	-1,396	-3,849	-4,496	-5,000	-2,979	-2,498	-5,401
Medium-Haul ^c	737-900	8,700	302	3,301	-1,098	-1,950	1,404	-1,049	-1,696	-2,200	-179	302	-2,601
Narrow Body	DC-9-15	8,200	801	3,801	-598	-1,450	1,904	-549	-1,196	-1,700	321	802	-2,101
	737-800	7,300	1,701	4,701	302	-550	2,804	351	-296	-800	1,221	1,702	-1,201
	MD-80	7,200	1,801	4,801	402	-450	2,904	451	-196	-700	1,321	1,802	-1,101
	737-300	6,600	2,401	5,401	1,002	150	3,504	1,051	404	-100	1,921	2,402	-501
	A300-600	6,500	2,501	5,501	1,102	250	3,604	1,151	504	0	2,021	2,502	-401
	737-500	6,300	2,701	5,701	1,302	450	3,804	1,351	704	200	2,221	2,702	-201
	A319	6,100	2,901	5,901	1,502	650	4,004	1,551	904	400	2,421	2,902	-1
	757-200	6,000	3,001	6,001	1,602	750	4,104	1,651	1,004	500	2,521	3,002	99
737-600	5,800	3,201	6,201	1,802	950	4,304	1,851	1,204	700	2,721	3,202	299	
Regional Jets and Turboprops	ERJ 145	6,400	2,601	5,601	1,202	350	3,704	1,251	604	100	2,121	2,602	-301
	ERJ 135	6,400	2,601	5,601	1,202	350	3,704	1,251	604	100	2,121	2,602	-301
	CRJ	6,000	3,001	6,001	1,602	750	4,104	1,651	1,004	500	2,521	3,002	99
	DASH8-300	5,100	3,901	6,901	2,502	1,650	5,004	2,551	1,904	1,400	3,421	3,902	999

^a MD 11 aircraft runway length based on standard day +33°F. All other aircraft based on standard day +27°F.

^b Assumes all elevations at sea level.

^c Medium-Haul are aircraft weights for 800 miles of fuel on-board.

EFD	Houston Ellington Field	MSY	New Orleans International	MOB	Mobile Regional
IAH	Houston Intercontinental	LFT	Lafayette Regional	GPT	Gulfport Biloxi
HOB	Houston Hobby	BTR	Baton Rouge Metropolitan	HBG	Hattiesburg Regional
BPT	Beaumont/Port Arthur Regional	LCH	Lake Charles Regional		

Table 4.17 Airports located on 100-year flood plains. (Wilbur Smith Associates; USGS)

Associated City	State	Airport Name
Gonzales	Louisiana	Louisiana Regional
Sulphur	Louisiana	Southland Field
Galliano	Louisiana	South Lafourche
New Orleans	Louisiana	Lakefront
Reserve	Louisiana	St. John The Baptist Parish
Thibodaux	Louisiana	Thibodaux Municipal
Winnie/Stowell	Texas	Chambers County-Winnie Stowell
Galveston	Texas	Scholes International at Galveston

Table 4.18 Gulf Coast study area airports vulnerable to submersion by relative sea level rise of 61 to 122 cm (2 to 4 feet).

State	Associated City	Airport Name	Airport Type	Elevation in Feet
Louisiana	Galliano	South LaFourche	GA	1
Louisiana	New Orleans	New Orleans NAS JRB	MIL	3
Louisiana	New Orleans	Louis Armstrong-New Orleans International	CS	4

Table 4.19 Gulf Coast study area airports vulnerable to storm surge. (FAA Records, April 2006. FEMA Storm Inundation Data)

State	Associated City	Airport Name	Airport Type	Elevation
<i>Airports 0 to 18 Feet Elevation</i>				
Alabama	Gulf Shores	Jack Edwards	General Aviation	16
Alabama	Mobile	Dauphin Island Airport	General Aviation	5
Louisiana	Abbeville	Abbeville Chris Crusta Memorial	General Aviation	15
Louisiana	Crowley	Le Gros Memorial	General Aviation	17
Louisiana	Galliano	South LaFourche	General Aviation	1
Louisiana	Gonzales	Louisiana Regional	General Aviation	15
Louisiana	Houma	Houma-Terrebonne	General Aviation	10
Louisiana	Jeanerette	Le Maire Memorial	General Aviation	14
Louisiana	Lake Charles	Lake Charles Regional	Commercial Services	15
Louisiana	Lake Charles	Chennault International	Industrial	17
Louisiana	New Orleans	New Orleans NAS JRB	Military	3
Louisiana	New Orleans	Louis Armstrong-New Orleans International	Commercial Services	4
Louisiana	New Orleans	Lakefront	General Aviation	8
Louisiana	Patterson	Harry P. Williams Memorial	General Aviation	9
Louisiana	Reserve	St. John The Baptist Parish	General Aviation	7
Louisiana	Sulphur	Southland Field	General Aviation	11
Louisiana	Thibodaux	Thibodaux Municipal	General Aviation	9
Louisiana	Welsh	Welsh	General Aviation	18
Mississippi	Pascagoula	Trent Lott International	General Aviation	17
Texas	Beaumont/Port Arthur	Southeast Texas Regional	General Aviation	15
Texas	Galveston	Scholes International at Galveston	General Aviation	6
Texas	Orange	Orange County	General Aviation	13
<i>Airports 19 to 23 Feet Elevation</i>				
Alabama	Mobile	Mobile Downtown	Industrial	19
Louisiana	Iberia	Acadiana Regional	Industrial	20
Louisiana	Jefferson Davis	Jennings	General Aviation	20
Mississippi	Hancock	Stennis International	Industrial	23
Mississippi	Harrison	Keesler AFB	Military	20
Texas	Brazoria	Brazoria County	General Aviation	22
Texas	Chambers	Chambers County-Winnie Stowell	General Aviation	21

Table 4.20 Hurricane impacts on toll revenue in Florida. (Ely 2005)

Entity	Hurricane Season 2004		
	Millions		
	Estimated Revenue Loss	Estimated Damage Costs	Estimated Total Loss
Turnpike System	\$32.21	\$8.50	\$40.71
FDOT-Owned (5)	2.48	1.33	3.81
Garcon Point	0.27	0.22	0.49
Mid-Bay	0.52	0.25	0.77
MDX	1.03	0.00	1.03
Bob Sikes	0.30	1.76	2.06
THCEA	1.44	0.00	1.44
OOCEA	9.07	1.50	10.57
Lee County	0.70	0.87	1.57
Miami-Dade County	0.11	0.00	0.11
Monroe (Card Sound)	0.04	0.00	0.04
Total	\$48.17	\$14.43	\$62.60