

TOURISM ECONOMICS

The Potential Economic Impact of the Salton Sea on the Greater Palm Springs Tourism Industry

A study prepared for:



Presented by:



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1 Introduction

1.1 Summary of Findings

- Tourism in the Greater Palm Springs region is steadily expanding, as visitor spending rose 6.8% in 2012 and 4% in 2013. In 2013, an estimated 12.1 million visitors generated \$5.8 billion in the region.
- The visitor economy supported 46,863 jobs in 2013, representing one quarter of total employment in the region.
- Further decay of the Salton Sea poses a threat to Greater Palm Springs tourism demand as resulting “bad smell” events and dust storms deter visitors.
- A review of similar events – such as harmful algal blooms (HABs) and red tides – and natural and man-made disasters reveals that their impact can be dramatic and endures beyond the individual event due to brand damage and traveler misperceptions.
- These case studies indicate a potential loss in visitor spending ranging from 5% to 25% per year. The potentially elongated period of time when the Salton Sea could damage the Greater Palm Springs tourism product could cause these losses to accumulate.
- The degradation of the Salton Sea could cost the Greater Palm Springs region between \$1.3 billion and \$6.5 billion in lost tourism spending over five years. The resulting total economic loss would range from \$1.7 billion to \$8.6 billion, including indirect supply chain and induced income effects.
- State and local taxes could experience up to a cumulative \$712 million loss by 2019. The total employment loss in the region could approach 3,200 jobs by 2019.
- Potential impacts of the Salton Sea depend greatly on both environmental factors and traveler perceptions. Efforts to resolve the pending Salton Sea crisis by the State of California and local water authorities, coupled with a robust marketing plan to counter misperceptions and encourage travel to the region, would limit the extent to which the future of the Salton Sea weighs on Greater Palm Springs tourism.

1.2 Overview

The Salton Sea is a briny lake spanning 350 square miles in the Coachella and Imperial valleys of California which was formed accidentally in the late 19th century when the Colorado River breached its banks, flooding a low point in the region known as the Salton Sink. Once a popular tourist attraction in Southern California and the largest fresh water lake in the state, the Salton Sea has reduced in size over the years as the speed of evaporation has outpaced that of additional inflows. This, combined with the residual salt from previous lake formations in the valleys and runoff from local agricultural operations, has caused salinity levels of the lake to rise substantially, killing off much of the resident fish population. The resulting rancorous “dead fish” smell, coupled with regular flooding events, has decimated the tourism industry of the Salton Sink and could threaten tourism demand in the Greater Palm Springs region.

If the Salton Sea continues to degrade, the region will suffer detrimental effects to local agriculture, recreation, human habitation and wildlife. Nearly 400 species of migratory birds numbering in the millions visit the Salton Sea each year. In addition to increasing fish kills and the destruction of one of the largest bodies of water in the Pacific flyway, further declines in air quality could render the Salton Sink uninhabitable. The increasing occurrence of “bad smell” events – wind storms and monsoons-- have, on occasion, carried the malodorous stench of the Salton Sea through Riverside County and the San Fernando Valley, reaching as far as the Ventura County coastline. These events could also weigh on tourism in the Greater Palm Springs region. Further, receding water levels will expose harmful pesticides that have settled on the seabed from agricultural runoff, creating the potential for toxic dust storms which could carry throughout the region.

This study seeks to understand the potential damage to the tourism industry of the Greater Palm Springs region over a five-year scenario in which the degradation of the Salton Sea continues without effective remediation. The extent of the Salton Sea’s impact on visits and spending over the forecast horizon will ultimately vary based on environmental factors and consumer response. As such, a range of potential visitor impacts is developed based on historic case studies of similar environmental events – such as red tides and harmful algal blooms (HABs) – and various natural and man-made disasters. A baseline and crisis scenarios – informed by the selected case studies – are developed in order to quantify the range of impacts of a dying Salton Sea on tourism in the region.

2 Tourism in the Greater Palm Springs Region

2.1 Tourism Industry

Tourism is a vital aspect of the economy of Greater Palm Springs. A resort destination located in the Coachella Valley, Greater Palm Springs is a popular destination for overnight trips from domestic and international origins, as well as day visits from residents of Southern California and much of the Pacific Coast.

The Greater Palm Springs visitor economy has grown substantially in recent years. Visitor spending rose by 6.8% in 2012, surpassing its pre-recession peak. In 2013, amidst the sweeping California wildfires and local flooding events in the summer months and the federal government shutdown in October, visitor spending again rose by 4% as 12.1 million visitors came to the region. This visitor spending generated \$5.8 billion in total business sales in the Greater Palm Springs region in 2013, including indirect and induced impacts. The visitor economy supported employment of more than 46,863 jobs, representing a quarter of total employment in the region. Tourism in the region generated a total \$487 million in state and local taxes in 2013.

It is estimated that the Greater Palm Springs region received close to 12.3 million visitors in 2014 – a 1.7% gain over the previous year. Assuming spending by the average visitor rose by 2% – as is consistent with recent observations – direct visitor spending topped \$4.6 billion in 2014 and more than \$6 billion in total business sales were generated for a gain of 3.8%. The visitor economy supported an estimated 47,306 jobs in the region and generated close to \$505 million in state and local taxes.

Over the next five years, the number of visits to the Greater Palm Springs region is expected to grow at close to 2% per annum for a cumulative total of 65.3 million visitors. Holding the rate of growth in average per-visitor spending at 2%, visitor spending will increase by roughly 4% per annum. As such, direct tourism sales will approach a cumulative total of \$26.2 billion by 2019, and total tourism-generated sales at businesses in the region will near \$34.2 billion. By 2019, the visitor economy will support more than 49,741 jobs in the region. Including indirect and induced impacts, tourism in the Greater Palm Springs region will generate an estimated \$2.8 billion in state and local taxes over a five-year forecast horizon.

2.2 Traveler Perceptions

The greatest risk posed by the death of the Salton Sea to Greater Palm Springs tourism is the negative impact it may have on traveler perceptions. The association of the “Salton Stink” with the Greater Palm Springs region would weigh on tourism demand in the area. Further, the increasing frequency and intensity of “bad smell” events and dust storms would cause an even greater disruption to traveler plans in the region.

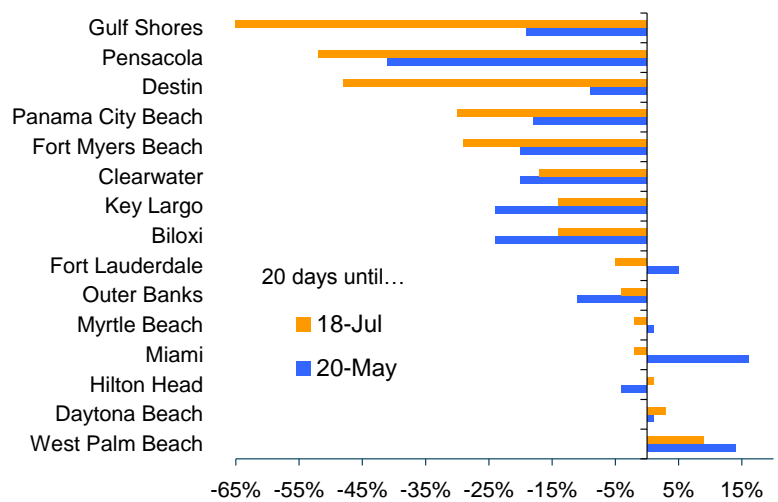
Recently, the South Coast Air Quality Management District (SCAQMD) installed a Hydrogen Sulfide detection system near the Salton Sea and has begun issuing odor advisories when levels of the pollutant exceed the state standard of 30 parts per billion averaged over one hour. The advisories describe the odor as a “rotten egg” smell which can travel throughout the region as winds shift. When an advisory is in place, residents and visitors are discouraged from spending long periods of time outdoors.

Perceptions dramatically effect traveler behavior as leisure travel is highly discretionary and alternative destinations are readily available. The slightest misperception of risk or the effects of a disaster can fundamentally shift travel patterns.

As an example, the Deepwater Horizon oil spill in the Gulf of Mexico, which began on April 20, 2012, was the largest offshore spill in U.S. history. TripAdvisor data on page views illustrates the effects an environmental crisis can have on traveler behavior, even in areas unaffected by the disaster. The adjacent chart shows the percentage drop in the share of TripAdvisor U.S. page views for various destinations for the 20 days leading up to May 20 and leading up to July 18. The effect of the oil spill on interest in the region is striking and in most cases has only increased over time.

Consumers searched 52 percent less for Pensacola, FL in July, 65 percent less for Gulf Shores, AL, and 48 percent less for Destin, FL.

Share of TripAdvisor U.S. Page Views
% change on same 20-day period one year ago



Source : TripAdvisor

TripAdvisor Page Views				
% Change in Share of U.S.				
Twenty days until...	20-May	20-Jun	18-Jul	
West Palm Beach	14%	17%	9%	
Daytona Beach	1%	-4%	3%	
Hilton Head	-4%	0%	1%	
Miami	16%	1%	-2%	
Myrtle Beach	1%	3%	-2%	
Outer Banks	-11%	-8%	-4%	
Fort Lauderdale	5%	-1%	-5%	
Biloxi	-24%	-16%	-14%	
Key Largo	-24%	-28%	-14%	
Clearwater	-20%	-26%	-17%	
Fort Myers Beach	-20%	-31%	-29%	
Panama City Beach	-18%	-31%	-30%	
Destin	-9%	-25%	-48%	
Pensacola	-41%	-52%	-52%	
Gulf Shores	-19%	-47%	-65%	

Source: TripAdvisor

A more detailed look at the data in the above table shows that the impact extended beyond affected areas. For example, interest waned for the Outer Banks and for much of the Florida Gulf coast, even though oil did not spread beyond the panhandle region. Also, it is noteworthy that the east coast of Florida experienced increases in interest as an alternate destination.

TNS is a leading provider of market research and conducted a representative survey of U.S. households regarding their travel intentions and how they have changed. A survey conducted in June 2010 found that 10 percent of those already intending to travel to the Gulf region had changed their plans due to the oil spill. Another 22 percent had decided not to go for unspecified reasons, leaving only 68 percent of would-be travelers to the region holding onto their plans.

This figure is substantial in two regards. First, it represents the average for the entire Gulf shore region though large parts were untouched by oil. Clearly some regions bore the greater brunt of these cancellations. Second, these are changed plans only and therefore do not include any losses of trips that would have been planned and booked on short notice apart from the oil spill.

The TNS survey also asked which destinations were chosen as substitutes when Gulf trip plans were changed. Remarkably, North Carolina, Massachusetts and Maine were among the top alternative destinations, indicating a high aversion even to proximity to the Gulf region.

As another perspective, the Louisiana Office of Tourism commissioned two successive surveys which were fielded by MDRG in the aftermath of the spill. The

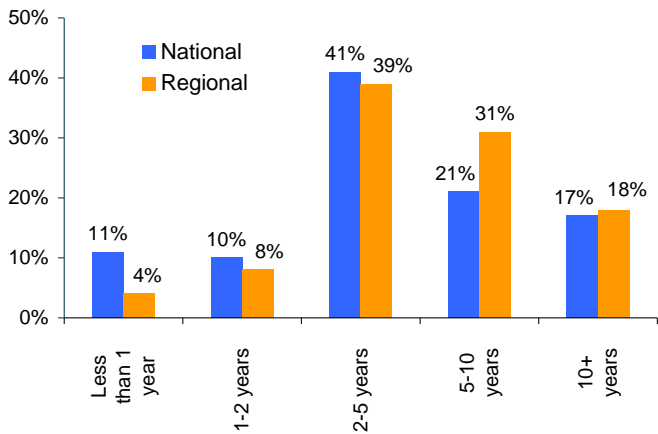
first was a national survey conducted from May 19-21, 2010. The second was a regional survey of key visitor source markets conducted June 18-21.

The May survey found that 26 percent of those who had plans to visit the state of Louisiana had postponed or cancelled their trip. The June survey, which focused on relatively nearby visitor markets in Texas, Mississippi and Florida, found that 17 percent had postponed or cancelled their planned vacation to Louisiana.

Equally serious was the perception that the disaster would affect Louisiana for years to come. Nearly 80 percent of national respondents believed the disaster would impact the state for at least two years with nearly 40 percent stating that the impact will extend five years or longer. Regional respondents had an even bleaker view of the future with 88 percent indicating an impact of at least two years, and nearly 50 percent expecting an impact lasting at least five years.

Perception of Effect on Louisiana

Share of respondents



Source: Louisiana Office of Tourism

Significant misperceptions were also identified by these surveys. For example, only 14 percent of national respondents realized that Louisiana oyster beds had not been contaminated with oil, and only 45 percent of respondents believed that seafood at Louisiana restaurants was safe

3 Case Studies & Potential Losses

In order to understand potential traveler behavior in the event of continued Salton Sea degradation, Tourism Economics assessed a sample of disaster case studies to determine the range and duration of impacts on tourism in the Greater Palm Springs region. Using these studies as a foundation, a formal impact analysis was conducted to identify the possible outcomes of “bad smell” events and dust storms associated with the sea’s worsening state.

3.3 Duration & Scale of Impacts

A number of comparable events have been considered to determine a range of possible direct impacts on tourism in the Greater Palm Springs region. The duration and scale of the previous events were considered at a national, state or local level, depending on data availability. The impacts of the Salton Sea on the Greater Palm Springs area will more closely resemble those of cases where local impacts were captured.

Duration is calculated as the combined length of time that there was a physical disruption to destination services (or quality) in addition to the time period for which perceptions were affected. This is measured as the time between the start of each event and the time that visits and spending return to business as usual estimates.

A variety of events have been examined in terms of duration and scale to determine the expected range of impacts on tourism activity:

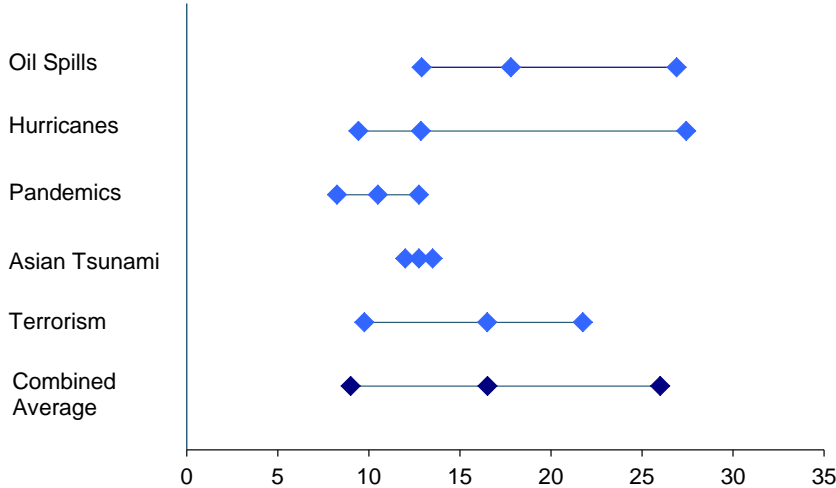
- Oil spills
- Harmful Algal Blooms (HABs) & Red Tide events
- Hurricanes
- SARS / H1N1
- Asian Tsunami
- Terrorist attacks

The scale of the Salton Sea’s decay and the potential tourism disruption are most akin to localized red tide events and harmful algal blooms (HABs). However, more severe natural disasters and unpredictable events are included in the analysis as examples of cases where perceptions of destinations have been influenced even after the initial physical disruption is over.

The following chart documents the tourism impact duration of a wide range of events in terms of the months required to attain prior visitor spending peaks. The average ranges are based on a single standard deviation of the recorded durations.

Tourism Disruption after Events

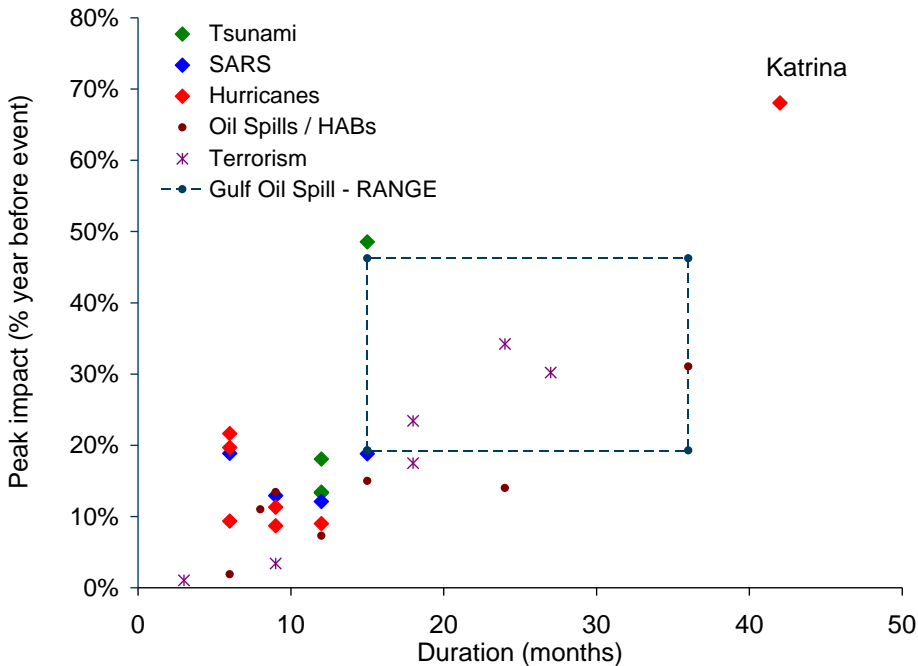
Months after initial disruption for visitor spending to return to baseline (typical range and average duration by type of event)



Source : Tourism Economics

The following chart illustrates that there is a key relationship between the length of the disruption and the overall scale of the tourism impact. In addition, we see that some relatively short-lived events can have very large effects on tourism for that period.

Event Duration & Scale



The left axis shows the peak percentage loss in tourism spending. The bottom axis shows the duration for spending to return to pre-disaster levels.

The charts above represent findings from previous Oxford Economics research¹ into the tourism impacts of the Gulf Oil Spill conducted for the U.S. Travel Association. They show a broad range of impacts for all event types which provides a context for future Salton Sea-related events. For instance, some hurricanes have reported only a single-season impact while Katrina stands out in terms of its duration and scale of impact.

The adjacent table presents the duration and scale of a wide range of events. Impacts refer to the total loss in visitor spending resulting from each event. Average impacts are presented for each event type.

HABs and red tides are the events most similar to the degradation of the Salton Sea. They manifest in the form of chemical imbalances in a body of water which can cause the growth of malodourous algae and lead to massive fish kills. In the event of a HAB or red tide, a poor air or water quality advisory is generally issued deterring people from visiting the affected area. The duration of such events varies considerably and has been documented from as little as a week to as long as 20 months. Extensive cleanup efforts are often necessary and may involve the removal of algal blooms and dead fish and marine life, as well as chemical water treatments.

Range of Event Impacts		
Event Type	Total Duration (months)	Total Impact (share of tourism revenue)
Tsunami	13	23%
Thailand Tsunami	12	13%
Indonesia Tsunami	12	18%
Sri Lanka Tsunami	12	13%
Maldives Tsunami	15	49%
Terrorism	17	18%
Bali Bombing (2005)	18	23%
Bali Bombing (2003)	24	34%
London Bombing	3	1%
New York 9/11 Attack	27	30%
Madrid Bombing	9	3%
Egypt Sharm el-Sheikh Attacks	18	17%
Pandemic	11	16%
Hong Kong SARS	6	19%
Singapore SARS	15	19%
Canada SARS	12	12%
Mexico H1N1	9	13%
Hurricane	13	21%
Louisiana - Katrina	42	68%
Belize - Keith	6	9%
Cayman - Ivan	6	20%
Grenada - Ivan	6	22%
Hawaii - Iwa	12	9%
Netherland Antilles - Luis	9	11%
US Virgin Islands - Hugo	9	9%
Oil Spills	20	20%
Exxon Valdez	24	14%
Ixtoc	36	31%
Amoco Cadiz	8	11%
Erika	9	13%
Prestige	12	7%
Gulf Oil Spill (Min)	15	19%
Gulf Oil Spill (Max)	36	46%
HABs & Red Tides	11	18%
North Carolina Coast	6	2%
Pacific Northwest	15	15%
Florida - Ft. Walton Beach & Destin	20	32%
Florida - Lee County	8	25%
Texas - Galveston County	6	17%

¹ Oxford Economics (2010), Potential Impact of the Gulf Oil Spill on Tourism, U.S. Travel Association, Washington DC.

3.4 Description of Key Case Studies

3.4.1 Red Tide Event on the North Carolina Coast (1987)

- A red tide event occurred in 1987 affecting four coastal counties in North Carolina. A HAB off the coast of Florida was carried by the Gulf Stream to the shores of North Carolina. The event lasted approximately six months.
- As a result of the red tide, the affected communities lost between a combined \$25 million and \$28 million in recreation and tourism revenues. This represents a loss of 2% of the nearly \$2 billion generated in hotel, lodging, amusement and recreation services throughout the state of North Carolina in the previous year.

3.4.2 ASP Event in the Pacific Northwest (2002-2003)

- Between 2002 and 2003, high acidity levels in razor clams residing along the Pacific Coast led to a season long closure of the fishery in Washington. The closure was intended to protect human consumers from the toxins which can cause Amnesic Shellfish Poisoning (ASP) and lasted roughly 15 months.
- The resulting loss to affected communities totaled between \$10 million and \$12 million, or about 15% of combined revenues from tourism-related commerce.

3.4.3 Red Tide Events in Ft. Walton Beach & Destin, FL (1995-1999)

- A number of low and high intensity red tide events occurred in the area of Ft. Walton Beach and Destin on the Florida Panhandle between 1995 and 1999. The combined impacts of all observed events occurred over a period of 20 months and resulted in \$6.5 million in lost revenue to tourism-dependent sectors – a loss of 32.3%.
- Low intensity events produced an average monthly decline in restaurant and lodging revenues of \$2.8 million for a 29.3% loss. High intensity events led to an average monthly decline of \$3.7 million, or 34.6% of restaurant and lodging revenues.

3.4.4 Red Tide Event in Lee County, FL (2005)

- In February 2005, a red-tide bloom on the Southwest coast of Florida began moving north toward Sanibel Island in Lee County.

By September, the bloom was responsible for the killing of fish, manatees, sea turtles and dolphins along most of the coastline. For Lee County, the event lasted roughly 15 months – ending in October. However, the red tide returned to the area again in May and July of 2006.

- During the 2005 bloom, hotels and motels in Lee County reported an average annual loss of 6% of room and service sales revenue. In total, the local lodging industry suffered a 25% loss of gross revenue in 2005.

3.4.5 Red Tide Events in Galveston, TX (2000)

- The 2000 red tide event in Galveston began in late June near Port Isabell. Over the following six months, blooms were reported along much of the Galveston coastline and in several local bays, resulting in the death of millions of fish and the closure of several coastal fisheries and beaches.
- Impacts on local tourism industries varied, with revenue losses as high as 29.5% at some food stores. Altogether, local tourism industries suffered an average loss of 16.5% in 2000 as a result of the bloom.
- Direct impacts on output among food stores, miscellaneous retailers, hotels and lodging places and amusement and recreation services in Galveston totalled close to \$11 million – 1.9% of combined annual output in 2000. Estimates of total impacts on local output topped \$18 million, while total employment losses related to the red tide likely surpassed 400 jobs.

4 Economic Impacts of the Salton Sea

4.1 Scenario Analysis

Using the case studies outlined previously, Tourism Economics has estimated a range of potential economic impacts on the Greater Palm Springs region with the continued decay of the Salton Sea and resulting “bad smell” events and dust storms over the next five years. Ultimately, the scale and duration of these events are difficult to predict – dependent largely upon the speed of the sea’s evaporation and wind direction in the Coachella Valley. Tourists’ perceptions and their behavior will also vary with each event and could lead to negative impacts lasting longer than the events themselves.

Two alternative scenarios were modeled in order to capture the wide range of potential economic impacts. The low impact scenario assumes a minimal instance of “bad smell” events and dust storms in the Greater Palm Springs area in a given year, each lasting no longer than a week at a time, with tourist attitudes affected only for the duration of each event. The high impact scenario assumes that “bad smell” events and dust storms increase in frequency and duration in a given year, with tourist attitudes adversely affected year round.

4.2 Estimated Impacts

The minimum impact of the Salton Sea in 2015 is estimated to be a 5% loss in tourist spending by visitors to the Greater Palm Springs region, totaling \$241 million. The total economic impact of lost revenues could reach \$316 million. Lost state and local tax losses could tally \$26 million. Direct tourism-related employment could suffer a loss of approximately 468 jobs, leading to a total employment impact of 616 jobs in the region.

The maximum impact of the Salton Sea in 2015 could reach 25% of tourist spending in the Greater Palm Springs region, totaling \$1.2 billion. Lost tourism revenues could generate a total economic impact of nearly \$1.6 billion. The resulting Federal tax revenue loss will exceed \$100 million, while state and local tax revenues face a \$132 million loss. Direct tourism-related employment could incur a loss of roughly 2,342 jobs, resulting in a total employment impact of 3,080 jobs in the region.

First-Year Impact of Salton Sea					
	Baseline	Low Impact Scenario		High Impact Scenario	
			Difference		Difference
Total Visitors (millions)	12.6	11.9	-0.6	9.4	-3.1
Overnight	5.7	5.4	-0.3	4.3	-1.4
Day	6.8	6.5	-0.3	5.1	-1.7
Total Spending (million \$)	4,829	4,588	-241	3,622	-1,207
Overnight	3,021	2,870	-151	2,266	-755
Day	1,838	1,746	-92	1,378	-459
Total Economic Impact (million \$)	6,320	6,004	-316	4,740	-1,580
Direct	4,829	4,588	-241	3,622	-1,207
Indirect	754	717	-38	566	-189
Induced	736	700	-37	552	-184
Federal Taxes (million \$)	403	382	-20	302	-101
State & Local Taxes (million \$)	526	500	-26	395	-132
Total Employment Impact	47,799	47,183	-616	44,719	-3,080
Direct	36,349	35,881	-468	34,007	-2,342
Indirect	5,511	5,440	-71	5,156	-355
Induced	5,939	5,862	-77	5,556	-383

The same tourism losses in the first year of each scenario (5% in the low impact scenario, 25% in the high impact scenario) are applied to each of the following years over the five-year forecast horizon. Essentially, this addresses the scale and duration of “bad smell” events and dust storms in a given year in isolation from previous years. Therefore, the extent of the Salton Sea’s impact over the five-year horizon could be greater than the estimates presented here, considering the potential for compounding impacts from year-to-year as the sea continues to decay.

The minimum impact of the Salton Sea on tourism spending in the Greater Palm Springs region over the five-year forecast horizon would surpass \$1.3 billion. The total economic loss, including indirect and induced impacts, would exceed \$1.7 billion by 2019. Tax revenue losses would total \$109 million at the Federal level and \$142 million at the state and local levels. In 2019, direct tourism employment would reach 37,338 jobs – 487 fewer than in the baseline forecast. The total employment loss in 2019 would approach 641 jobs.

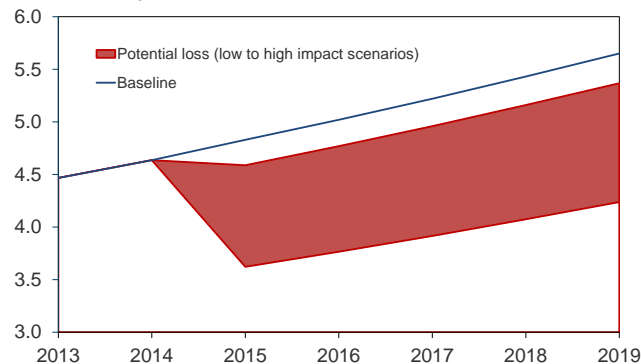
The maximum impact of the Salton Sea over the five-year forecast horizon could exceed \$6.5 billion in lost tourism revenue in the Greater Palm Springs region. The total economic loss would approach \$8.6 billion by 2019. Federal tax losses are estimated at \$545 million, while state and local tax revenues would suffer a \$712 million loss. Tourism-related employment would incur a direct loss of 2,437 jobs in 2019, and the total loss to employment in the region would near 3,205 jobs.

Cumulative Five-Year Impact of Salton Sea					
	Baseline	Low Impact Scenario	Difference	High Impact Scenario	Difference
Total Visitors (millions)	65.3	62.0	-3.3	49.0	-16.3
Overnight	30.3	28.8	-1.5	22.7	-7.6
Day	35.0	33.2	-1.7	26.2	-8.7
Total Spending (million \$)	26,151	24,844	-1,308	19,613	-6,538
Overnight	16,685	15,851	-834	12,514	-4,171
Day	9,786	9,296	-489	7,339	-2,446
Total Economic Impact (million \$)	34,224	32,513	-1,711	25,668	-8,556
Direct	26,152	24,844	-1,308	19,614	-6,538
Indirect	4,085	3,880	-204	3,063	-1,021
Induced	3,988	3,789	-199	2,991	-997
Federal Taxes (million \$)	2,180	2,071	-109	1,635	-545
State & Local Taxes (million \$)	2,849	2,707	-142	2,137	-712
Total Employment Impact*	49,741	49,100	-641	46,536	-3,205
Direct	37,826	37,338	-487	35,389	-2,437
Indirect	5,735	5,661	-74	5,365	-370
Induced	6,180	6,101	-80	5,782	-398

* Employment impacts represent final forecast year (2019) totals

Salton Sea Impact on Greater Palm Springs Tourism

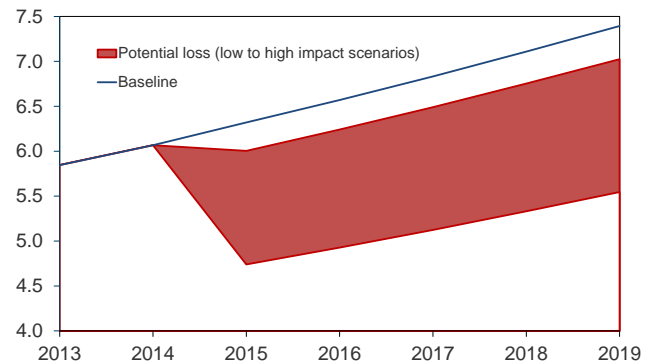
Tourism spending, billion \$



Source: Tourism Economics

Salton Sea Impact on Greater Palm Springs Economy

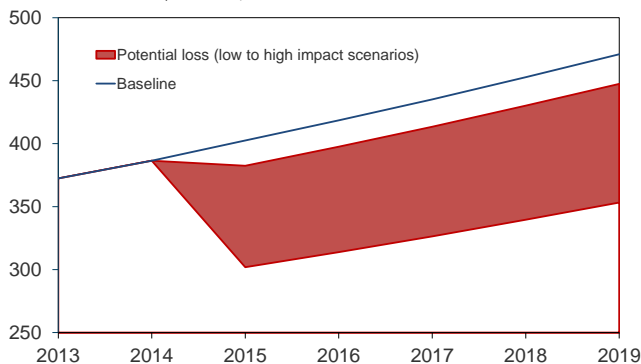
Total economic impact, billion \$



Source: Tourism Economics

Salton Sea Impact on Federal Taxes

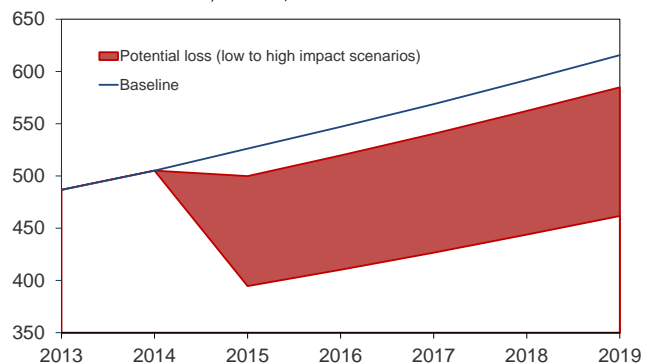
Federal tax revenue, million \$



Source: Tourism Economics

Salton Sea Impact on State & Local Taxes

State & local tax revenue, million \$



Source: Tourism Economics

4.3 Methodology

Potential high and low tourism losses were identified from case studies and have been applied to the baseline forecast for tourism revenue in the Greater Palm Springs region. A range of impacts for the region has been estimated according to the range of impacts in case studies. The expected duration of a “bad smell” event or dust storm varies between the two scenarios, as does the range of proportional responses in tourism revenues.

In the low impact scenario, “bad smell” events and dust storms are infrequent, occurring no more than once per month, on average, and lasting no more than a week at a time. In this scenario, tourist attitudes toward the region are only affected during the duration of each event, meaning that future visits and spending are not impacted.

In the high impact scenario, “bad smell” events and dust storms occur more frequently and for longer periods of time, spanning upwards of six months out of the year. In this scenario, tourist attitudes toward the region are adversely affected beyond the duration of a single event, altering travel to the region throughout the year.

The estimated loss of tourism spending in each scenario is considered the direct economic impact, from which indirect and induced impacts are calculated to determine the total economic impact. The impact on tax revenues at the federal, state and local levels are then calculated as proportional declines resulting from the impacts to each economic segment (direct, indirect and induced). Finally, it is assumed that direct tourism employment grows at one quarter the pace of tourism spending in the region in a given year. The resulting direct employment loss in each scenario is used to determine the indirect, induced and total employment impacts.

4.4 Forecast Tables

Greater Palm Springs Tourism - Baseline							
	2013	2014	2015	2016	2017	2018	2019
Total Visitors (millions)	12.09	12.30	12.56	12.80	13.05	13.31	13.58
Overnight	5.39	5.54	5.72	5.88	6.05	6.24	6.42
Day	6.69	6.75	6.84	6.92	7.00	7.08	7.16
Total Spending (million \$)	4,467	4,636	4,829	5,020	5,220	5,432	5,650
Overnight	2,739	2,871	3,021	3,170	3,328	3,496	3,670
Day	1,728	1,779	1,838	1,895	1,955	2,017	2,081
Total Economic Impact (million \$)	5,846	6,067	6,320	6,570	6,832	7,109	7,394
Direct	4,467	4,636	4,829	5,020	5,220	5,432	5,650
Indirect	698	724	754	784	815	848	882
Induced	681	707	736	766	796	828	862
Federal Taxes (million \$)	372	386	403	418	435	453	471
State & Local Taxes (million \$)	487	505	526	547	569	592	616
Total Employment Impact	46,863	47,306	47,799	48,272	48,753	49,247	49,741
Direct	35,637	35,974	36,349	36,709	37,074	37,450	37,826
Indirect	5,403	5,454	5,511	5,566	5,621	5,678	5,735
Induced	5,823	5,878	5,939	5,998	6,057	6,119	6,180

Greater Palm Springs Tourism - Salton Sea Low Impact							
	2013	2014	2015	2016	2017	2018	2019
Total Visitors (millions)	12.09	12.30	11.93	12.16	12.40	12.65	12.90
Overnight	5.39	5.54	5.43	5.59	5.75	5.92	6.10
Day	6.69	6.75	6.50	6.57	6.65	6.72	6.80
Total Spending (million \$)	4,467	4,636	4,588	4,769	4,959	5,160	5,367
Overnight	2,739	2,871	2,870	3,011	3,162	3,321	3,487
Day	1,728	1,779	1,746	1,801	1,857	1,916	1,977
Total Economic Impact (million \$)	5,846	6,067	6,004	6,241	6,490	6,753	7,024
Direct	4,467	4,636	4,588	4,769	4,959	5,160	5,367
Indirect	698	724	717	745	775	806	838
Induced	681	707	700	727	756	787	819
Federal Taxes (million \$)	372	386	382	398	413	430	447
State & Local Taxes (million \$)	487	505	500	520	540	562	585
Total Employment Impact	46,863	47,306	47,183	47,650	48,125	48,612	49,100
Direct	35,637	35,974	35,881	36,236	36,597	36,967	37,338
Indirect	5,403	5,454	5,440	5,494	5,549	5,605	5,661
Induced	5,823	5,878	5,862	5,920	5,979	6,040	6,101

Greater Palm Springs Tourism - Salton Sea High Impact							
	2013	2014	2015	2016	2017	2018	2019
Total Visitors (millions)	12.09	12.30	9.42	9.60	9.79	9.98	10.18
Overnight	5.39	5.54	4.29	4.41	4.54	4.68	4.81
Day	6.69	6.75	5.13	5.19	5.25	5.31	5.37
Total Spending (million \$)	4,467	4,636	3,622	3,765	3,915	4,074	4,237
Overnight	2,739	2,871	2,266	2,377	2,496	2,622	2,753
Day	1,728	1,779	1,378	1,422	1,466	1,513	1,561
Total Economic Impact (million \$)	5,846	6,067	4,740	4,927	5,124	5,331	5,546
Direct	4,467	4,636	3,622	3,765	3,915	4,074	4,237
Indirect	698	724	566	588	612	636	662
Induced	681	707	552	574	597	621	646
Federal Taxes (million \$)	372	386	302	314	326	340	353
State & Local Taxes (million \$)	487	505	395	410	427	444	462
Total Employment Impact	46,863	47,306	44,719	45,162	45,611	46,074	46,536
Direct	35,637	35,974	34,007	34,343	34,685	35,037	35,389
Indirect	5,403	5,454	5,156	5,207	5,259	5,312	5,365
Induced	5,823	5,878	5,556	5,611	5,667	5,725	5,782

5 Mitigating Losses

The state of the Salton Sea will continue to worsen unless actions are taken to increase its water levels, reduce its salinity and clean up the decaying organic matter along its banks. Given the importance of tourism to the Greater Palm Springs region, allowing the Salton Sea to degrade further would have detrimental effects beyond the five-year scenarios presented in this study. Furthermore, the potential for the sea's water levels to recede faster than anticipated could amplify the impacts on tourism and other industries in the region.

Recently, the State of California passed a \$7.5 billion water bond issue aimed at replenishing depleted water supplies throughout the state and remediating water-related crises, such as the death of the Salton Sea. However, the Salton Sea crisis has yet to receive a funding allocation from the new revenue stream as the funding program begins in 2017. Local water authorities have allocated resources to raising the sea's water level in the past, but their efforts have fallen short of slowing or stopping its decay.

Regardless of the effectiveness of remediation efforts, tourist perceptions – specifically their association of the Salton Sea with the surrounding region – will play a large role in the extent to which Greater Palm Springs tourism declines as a result of the crisis. Therefore, a critical part of mitigating losses to tourism in the Greater Palm Springs region should be a robust communications and marketing plan to motivate travel to the region while informing potential visitors that “bad smell” events and dust storms related to the Salton Sea are an occasional risk but are not ever-present. This is the key lever available to the travel and tourism industry to move the total impact of the Salton Sea toward the lower boundary of the expected impact over the next five years.

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