



# THE CALIFORNIA GOLF ECONOMY: ECONOMIC AND ENVIRONMENTAL IMPACT REPORT

This report was commissioned by  
GOLF 20/20 for the  
California Alliance for Golf  
and prepared by SRI International





# The California Golf Economy



Published January 2013  
through an agreement with



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## Acknowledgements

SRI in agreement with GOLF 20/20, California Alliance for Golf (CAG), Southern California Section of the PGA (SCPGA), Northern California Section of the PGA (NCPGA), Northern California Golf Association (NCGA), Southern California Golf Association (SCGA), California Golf Course Superintendents Association (CGCSA), California Golf Course Owners Association (CGCOA), Golden State Chapter of the Club Managers Association of America (TGSC), California Turf and Landscape Foundation (CTLF), Northern California Golf Representatives Association (NCGRA), Golf Course Builders Association of America (GCBAA), American Society of Golf Course Architects (ASGCA), American Golf Corporation (AGC), The First Tee, Women's Southern California Golf Association (WSCGA), Women's Golf Association of Northern California (WGANC), Pacific Women's Golf Association (PWGA), Junior Golf Association of Northern California (JGANC), SCPGA Junior Tour, and Junior Tour of Northern California prepared this report.

In addition, support for this report comes from the following national allied organizations: CMAA, GCSAA, LPGA, NGCOA, The PGA of America, PGA TOUR, and USGA.

The California Golf Economy study was conducted by Nancy Chan, Jennifer Ozawa, and Peter Ryan at SRI International with contributions from individuals representing the following allied golf association in California (in alphabetical order): Tom Addis (SCPGA), James Baird, Z. Davidson (CGCOA), Len Dumas (NCPGA), Ken Ferrell (SCPGA), Greg Frederick (SCPGA), Pat Gross (USGA), Ali Harivandi, Kevin Heaney (SCGA), Ted Horton (CGCSA), Mike Huck, Jeff Johnson (SCPGA), Craig Kessler (SCGA), Mike McCullough, Doug McIntosh, John McNair, Paul Major (AGC), Paul Metzler (PGA), Emmy Moore Minister, Nancy Mockett, Paula Mullins, Lyn Nelson (NCGA), Buck Page (SCPGA), Steve Plummer (CGCSA), Greg Prudham (SCPGA and PGA Magazine), Harvey Silverman, Larry Stowell, Chris Thomas (NCPGA), Bruce Williams (CGCSA and CTLF), and Tom Wilson (SCPGA).

## ACRONYMS

ASGCA	American Society of Golf Course Architects
CAG	California Alliance for Golf
CGCSA	California Golf Course Superintendents Association
CGCOA	California Golf Course Owners Association
CMAA	Club Managers Association of America
CTLF	California Turf and Landscape Foundation
GCBAA	Golf Course Builders Association of America
GCSAA	Golf Course Superintendents Association of America
GRAA	Golf Range Association of America
JGANC	Junior Golf Association of Northern California
LPGA	Ladies Professional Golf Association
NGCOA	National Golf Course Owners Association
NCGA	Northern California Golf Association
NCGRA	Northern California Golf Representatives Association
NCPGA	Northern California Section of The PGA of America
SCGA	Southern California Golf Association
SCPGA	Southern California Section of The PGA of America
PGA	The Professional Golfers' Association of America
PWGA	Pacific Women's Golf Association
TGSC	The Golden State Chapter of the Club Managers Association of America
USGA	United States Golf Association
WGANC	Women's Golf Association of Northern California
WGF	World Golf Foundation
WSCGA	Women's Southern California Golf Association

## STUDY OVERVIEW

The 2011 California Golf Economy report represents the second study estimating the economic impact of the California golf industry. SRI conducted a previous study for the base year 2006. An important addition to the 2011 study is the analysis of the golf industry's environmental impact—in particular, the presentation of data on the amount of water consumed by California golf courses, comparisons of water consumption by other economic sectors, and comparisons of the economic returns per irrigated acre of golf courses and other economic sectors. California golf courses produce significant economic returns in comparison to other agricultural commodities that require irrigation.<sup>1</sup>

During the period between the two golf economy studies (2006 and 2011), the California golf industry endured a significant U.S. economic recession (2007-2009). The effect of this recession can be seen acutely in the decline in golf real estate construction and golf facility capital investment between these two periods.

SRI estimates that **the California golf industry generated \$6.3 billion of economic activity in 2011**. This represents an overall decline of 7.7 percent from 2006 (when the estimated size of the golf economy was \$6.9 billion), primarily reflecting a contraction in golf real estate and golf facility capital investment, which includes new course construction. Retail sales of golf equipment and apparel, and shipments of these goods by California manufacturers also declined slightly during this period. Relative strengths were in core golf facility operations, tournaments and associations, and golf-related travel, which increased by 17.5 percent, 32.3 percent, and 10.8 percent, respectively. By comparison, inflation grew by 9.8 percent over this same five-year time period.<sup>2</sup> When the indirect and induced economic activity driven by golf's core and enabled industry segments are taken into consideration, SRI estimates that **the game of golf supported approximately \$13.1 billion of total economic activity, \$4.1 billion of wage income, and over 128,000 jobs in 2011**.

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<sup>1</sup> Sources for golf course water consumption and breakdown of ground and surface water consumption: Golf Course Superintendents Association of America, Environmental Institute for Golf (EIFG) (2009), *Golf Course Environmental Profile, Volume II: Water Use and Conservation Practices on U.S. Golf Courses*.

U.S. Geological Survey (2009), *Estimated Use of Water in the United States in 2005*. Latest available data. The release of 2010 data is anticipated to be in the 2014-2015 timeframe.

Sources for revenue per irrigated acre:

Golf Course Superintendents Association of America, Environmental Institute for Golf (EIFG) (2009), *Golf Course Environmental Profile, Volume II: Water Use and Conservation Practices on U.S. Golf Courses*.

California Department of Water Resources (2005), Agricultural Water Use Model.

U.S. Department of Agriculture National Agricultural Statistics Service (2011), *California Agricultural Statistics*.

<sup>2</sup> U.S. Bureau of Economic Analysis, GDP Deflator.

## **ANALYTICAL FRAMEWORK**

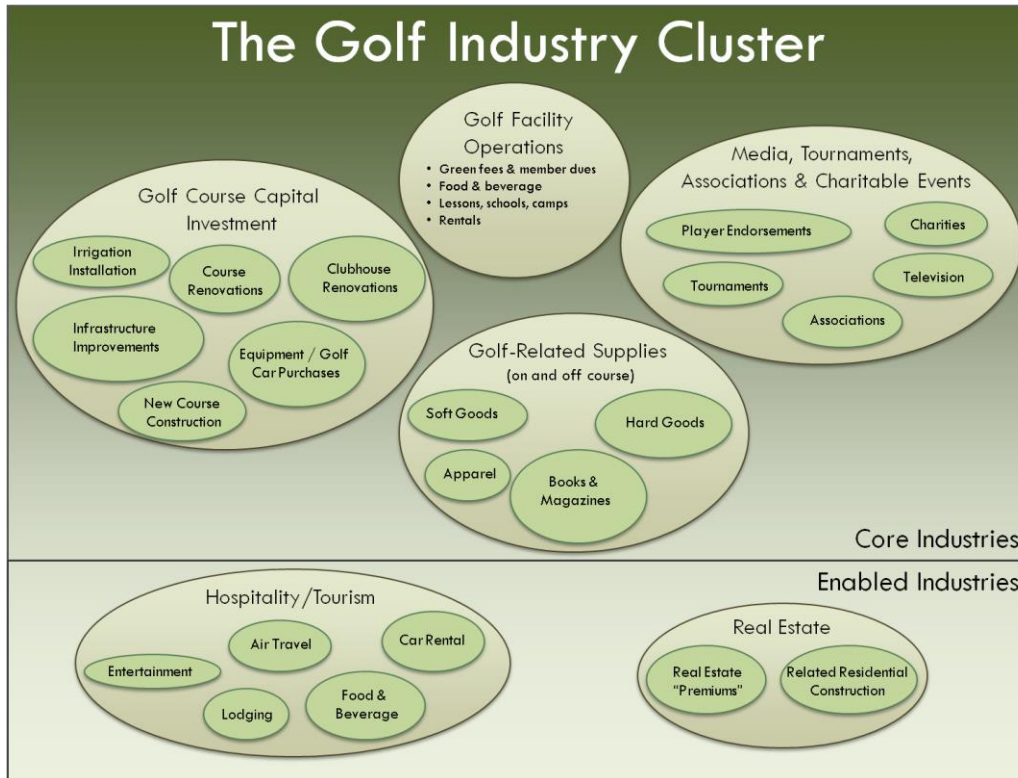
Current economic studies of the golf industry in different states emphasize various factors and outcomes. For example, one may focus largely on the turf industry, while another might examine the impact of sports and recreation-related tourism more broadly. Ideally, one would want to include all the key activities and industries that are enabled by and benefit from the game of golf. To meet this goal, SRI has developed a standardized, economic impact framework that can be employed to measure a comprehensive set of golf-driven industry components. This state-level framework draws on the conceptual model of the golf economy developed in SRI's 2000 national-level *The Golf Economy Report* and the 2005 state-level *The Virginia Golf Economy Report*.

### **A. GOLF INDUSTRY CLUSTER DEFINITION**

To arrive at economic impact, one must first estimate the size of the golf economy in the state. This entails mapping out where the golf industry begins and ends, and then estimating the size of each of these industry segments. We divide the golf industry cluster into two main categories: (1) core industries and (2) enabled industries (see figure on next page). The golf industry cluster begins with the golf facilities themselves and with those other core industries that produce goods and services used to operate facilities and to play the game: golf equipment and golf apparel manufacturers, golf course architects and course builders, turf maintenance equipment and service providers, and club management services. The game of golf further enables a number of other industries, such as golf-related tourism and real estate development.

We detail these industry segments and estimate their size in the following section. Having defined the core and enabled golf industries, it is possible to estimate the size of each industry segment and to total them for an overall estimate of the size of the golf economy. Multipliers can then be applied to calculate the ripple effects of these economic activities in terms of: (1) impact on total state economic output and (2) impact on total state employment. However, this process is complicated by the fact that, while most of these industries produce golf-related goods and services, the firms themselves may not limit their activities exclusively to the golf industry. For example, Nike produces golf shoes, but also running, tennis, basketball, and other shoes. Therefore, in general, our approach is to include only those firms and sales that are directly attributable to the game of golf. In so doing, we use a number of different estimation techniques to ensure that our final estimates are reasonable and robust.





Moreover, additional data challenges and location factors make estimation more difficult at the state level than the national level. For example, many of the major golf equipment manufacturers have production facilities in just a few states. Similarly, several of the major golf association headquarters are located in Florida. The presence of such firms, associations, or a number of well-known courses will change the size of golf's economic impact in the state considerably. Therefore, one should consider the size of the golf economy and the game's economic impact in the state in relation to the size of the overall economy and other major industries in that state.

## B. DATA SOURCES

SRI developed its framework for measuring state golf economies based on a broad set of existing sources and data. Although there have been several state-level impact studies conducted in the past, by numerous golf constituencies, few have used a similar methodology, resulting in very different estimates depending on the golf economy elements included. A great deal of data is collected on the golf economy by many organizations on a regular basis. For example, government agencies, national golf associations, and national associations in the enabled industries collect data on different industry elements periodically—annually, every few years, or every five years. In addition, these data are based on a relatively consistent set of inputs by large numbers of constituents. Therefore, the principal challenges involve acquiring the data, inflating or deflating the estimates for the proper target year, and



then combining them to represent the entire golf economy in the target year. The core and enabled industry indicators and data sources we have identified are as follows:

State Golf Economy Indicators and Data Sources		
Indicator	Primary source	Cross-validation source
<b>Golf Facility Operations</b>		
# of golf course facilities by type	PGA Facility Database, multiple years ( 2006-2011 data)	NGF Facility Database, multiple years; state golf associations; 2007 Economic Census
Avg. revenues by type of facility	PGA Facility Operations Survey, multiple years (2006-2011 data)	2007 Economic Census; National Golf Foundation; state task force
# of rounds by facility type	2006 PGA Compensation Survey (2005 data)	National Golf Foundation
<b>Golf Course Capital Investments</b>		
Avg. capital investment by type of facility	GCSAA Compensation Survey (2005, 2007, 2009, 2011 data)	National Golf Foundation; state task force
Number of golf courses under construction in current year	National Golf Foundation (2007-2011 data)	NGF Construction database; state task force
Avg. cost of construction per new course	Golf Course Builders Association of America	State task force; interviews with golf course builders in state
<b>Golf-Related Supplies</b>		
Golf-related manufacturing exports	Company annual reports; SEC filings; interviews	Company interviews; state task force
Golf equipment	National Sporting Goods Association (2007-2011 data)	2006 PGA Compensation Survey (2005 data)
Golf apparel	National Sporting Goods Association (2007-2011 data)	2006 PGA Compensation Survey (2005 data)
Golf media	Magazine Publishers of America for golf magazine sales; <i>Bowker Annual of Library and Book Trade Information</i> (2007-2011 data)	Amazon and Barnes & Noble for top golf book sales
<b>Major Tournaments</b>		
# of major tournaments held in state	State task force	PGA TOUR, LPGA
Visitor attendance at tournaments, tournament revenues	Major golf associations	State tourism agency; national golf associations; state golf associations
<b>Associations &amp; Charitable Events</b>		
# of major state-level golf associations	State counterparts of national golf associations	State task force
Annual expenditures/budgets	State golf associations	IRS Form 990
Revenues raised through charitable golf events	National Golf Foundation	Sampling of golf professionals and club managers to identify # of tournaments and average amount raised
<b>Real Estate</b>		
# of residential golf courses under construction	National Golf Foundation	Online research
# of lots per course	Real estate development site plans; interviews with real estate developers	Real estate agents

Avg. construction costs per home and real estate premium

Interviews with real estate developers

Real estate agents

**Hospitality/Tourism**

# of golf travelers or # of golf-related trips to the state

TNS Travel America or TIA/D.K. Shifflet & Associates

State department of tourism/recent surveys/studies

Avg. spending per traveler or per trip

TNS Travel America or TIA/D.K. Shifflet & Associates

State department of tourism/recent surveys/studies; National Golf Foundation

## THE SIZE OF CALIFORNIA’S GOLF ECONOMY

The table below presents SRI’s estimates for the size of each of the six golf industry segments and the overall golf economy in 2006 and 2011. SRI estimates the total size of California’s golf economy in 2011 was approximately \$6.345 billion, down from \$6.871 billion in 2006. The decline in the California golf economy was driven primarily by weaknesses in two industry segments: golf real estate and golf course capital investment, which includes new course construction.

Size of California’s Golf Economy in 2006 and 2011 by Industry Segment (\$ millions)		
	2006	2011
<b>CORE INDUSTRIES</b>		
Golf Facility Operations	\$2,846.3	\$3,343.3
Golf Course Construction and Capital Investment	\$325.3	\$144.5
Golf-Related Supplies (retail margin and manufacturing exports)	\$951.8	\$923.8
Major Golf Tournaments and Associations	\$137.2	\$181.5
<b>Total Core Industries</b>	<b>\$4,260.6</b>	<b>\$4,593.1</b>
<b>ENABLED INDUSTRIES</b>		
Real Estate	\$1,365.2	\$372.5
Hospitality/Tourism	\$1,245.3	\$1,379.3
<b>Total Enabled Industries</b>	<b>\$2,610.5</b>	<b>\$1,751.7</b>
<b>TOTAL GOLF ECONOMY</b>	<b>\$6,871.1</b>	<b>\$6,344.8</b>

Note: Columns sum may not sum due to rounding of individual estimates. Numbers also have not been adjusted for inflation but are expressed as nominal dollars.

### A. CORE INDUSTRIES

#### Golf Facility Operations

At the center of any golf economy lie the golf facilities—the largest component in terms of revenues. The revenue that flows through a golf facility comes primarily from green fees, membership fees, golf cart rentals, lessons, and associated spending on food and beverages. This revenue, in turn, supports a host of supply sectors including golf equipment and apparel designers and manufacturers, food and beverage providers, and turfgrass equipment and maintenance service providers. California’s 921 golf courses, 84 stand-alone ranges, and 65 miniature golf facilities generated \$3.343 billion of revenue in 2011. This reflects a nominal increase of 17.46 percent from the 2006 total revenues of \$2.846 billion (inflation was 9.78 percent during that same period).

<b>California Golf Facility Revenues in 2011 (\$ billions)</b>	
<b>Golf Facilities</b>	<b>\$3.283</b>
<b>Practice Ranges &amp; Alternative Facilities</b>	<b>\$0.060</b>
<b>TOTAL<sup>1</sup></b>	<b>\$3.343</b>

Note: <sup>1</sup> Golf facility revenues exclude on-course merchandise sales, which are included in the Golfer Supplies industry segment.

Golf is a sizeable industry, but even more significant when compared to other popular revenue-generating sports. For example, California’s golf facilities generate revenues that approach the combined revenue of all other professional spectator sports in the state—including baseball, football, basketball, etc. Spectator sports excluding golf generated revenues of \$3.587 billion in 2007, or \$3.825 billion in 2011 inflation-adjusted dollars.<sup>3</sup>

### **Golf Facility Capital Investments**

Golf facilities generate economic impacts beyond operational revenues through investments to upgrade and maintain facilities and infrastructure, and through the construction, expansion and renovation of courses. These investments create employment in the construction and maintenance industries and often involve the purchase of significant amounts of equipment and supplies from companies within the state. SRI’s estimate of California’s golf course capital investment is divided into two segments: (1) capital investment at existing facilities and (2) new course construction. Together, California’s golf facilities made \$144.5 million worth of capital investments in 2011: \$136.1 million of investments at existing facilities and \$8.4 million for the construction of new courses.

By comparison, California’s golf facilities made significantly greater capital investments in 2006: \$325.3 million in total capital investment, which includes \$161.7 million of investments at existing facilities and \$163.6 million for the construction of new courses. (When adjusted for inflation, these figures are \$357.1 million, \$177.5 million, and \$179.6 million in 2011 dollars, respectively.) The sharp decline in capital investments from 2006 to 2011 is most likely due to the financial crisis and economic recession of 2007-09, which caused many facilities to scale back their investments and to table new golf course and facility construction.

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<sup>3</sup> U.S. Census Bureau (2011). *California: 2007 Economic Census, Arts, Entertainment & Recreation Geographic Series*, July 2011.

<b>California Golf Course Construction and Capital Investment in 2011 (\$ millions)</b>	
<b>Golf Course Capital Investment<sup>1</sup></b>	<b>\$136.1</b>
<b>New Course Construction</b>	<b>\$8.4</b>
<b>TOTAL</b>	<b>\$144.5</b>

Note: <sup>1</sup> Only the New Course Construction category is included in the economic impact analysis, because it represents new economic output or activity. Golf course capital investment is typically financed through golf facility revenues, so including both Golf Course Capital Investment and Golf Facility Operations in economic impact analysis would result in double-counting.

### Golf-Related Supplies

California golfers spend significant sums on golf balls, golf clubs, golf apparel, and golf media (books, magazines, DVDs). The economic value that accrues to a state comes from the production of these golf-related goods, as well as retail sales of such items. California is home to a number of companies that design and manufacture golf cars, golf equipment, golf apparel and accessories—e.g., Acushnet, Callaway Golf, Cleveland Golf/Srixon, TaylorMade-adidas Golf, Yamaha Golf Car, etc. In 2011, California manufacturers' total value-added shipment of golf-related products was approximately \$787.7 million. California retailers and golf facilities earned approximately \$136.1 million on the sale of \$339.3 million of golf equipment, apparel, and media. In total, the Golf-Related Supplies segment contributed \$923.8 million in revenues to the California economy in 2011.

Both California manufacturers and retailers of golf-related products experienced slight declines in revenues from 2006 to 2011, following the national declines in the golf-related manufacturing and retail sectors as a result of the economic recession of 2007-09 and the sluggish recovery. In 2006, the Golf-Related Supplies segment contributed \$951.8 million: the total-value added shipment of golf-related products in 2006 was \$794.8 million; and the retail margin earned on golf equipment, apparel, and media was \$157.0 million in 2006 (dollar values expressed in nominal terms; inflation was 9.78 percent during that same period).

<b>California Retailers' Net Revenues on Consumer Purchases of Golf-Related Supplies in 2011 (\$ millions)</b>		
	<b>Total purchases</b>	<b>Retail sales margin</b>
Golf Equipment (retail margin)	\$259.5	\$104.1
Golf Apparel (retail margin)	\$73.7	\$29.6
Golf Media (retail margin)	\$6.1	\$2.5
<b>TOTAL</b>	<b>\$339.3</b>	<b>\$136.1</b>

Note: This includes on-course and off-course purchases of golf equipment, apparel and media. Column does not sum due to rounding.

California Manufacturers' Value-Added Exports of Golf-Related Products in 2011 (\$ millions)	
<b>TOTAL</b>	<b>\$787.7</b>

## Associations, Tournaments & Charitable Giving

### Associations

Numerous associations represent the game of golf in California, which is the largest state in the country with respect to the size of its population, economy, and golf participation. Consequently, many state golf organizations are split into Northern California and Southern California chapters, or sections. Examples of major state golf associations include the Northern California and Southern California Golf Associations, the Northern California and Southern California Sections of the Professional Golfers' Association, six chapters of the California Golf Course Superintendents Association, the Golden State Chapter of the Club Managers Association of America, and the California Golf Course Owners Association. Also very active are the Women's Golf Association of Northern California, the Women's Southern California Golf Association, a dozen chapters of the EWGA (Executive Women's Golf Association), the California Seniors' Golf Association, the Senior Golf Association of Northern California, the Seniors Golf Association of Southern California, and the Junior Golf Association of Northern California, to name but a few. There are many more women's, seniors, junior, and regional member golf associations at the local level. The First Tee, which aims to introduce youth to the game and values of golf, has 17 chapters in California. The Tiger Woods Foundation, headquartered in Irvine, supports youth development through scholarships and programs, as do the Northern and Southern California PGA Foundations and various other golf foundations. The California Turfgrass and Landscape Foundation supports statewide research related to turfgrass science and landscape management, and is affiliated with the California Golf Course Superintendents Association.

In 2011, California golf associations generated approximately \$69.5 million of expenditures. In 2006, SRI estimated expenditures by California associations to be \$41.4 million (or \$45.5 million in 2011 dollars when adjusted for inflation)—most of the increase in the 2011 estimate is attributed to the inclusion of smaller local golf associations identified via GuideStar, which is a large database of nonprofit organizations' 990 income tax filings and which was not employed for the 2006 study.

### Major Tournaments

In 2011, California hosted 12 major golf championships: five PGA TOUR events, two LPGA Tour events, three Champions Tour events, and two Nationwide Tour (now Web.com Tour) events. First played in

1926 and originally known as the Los Angeles Open, the Northern Trust Open is an annual PGA TOUR event hosted by the Riviera Country Club in Pacific Palisades, CA, in 2011.<sup>4</sup> Two PGA TOUR events known for pairing top PGA TOUR players with celebrities and executives are the AT&T Pebble Beach National Pro-Am (originally known as the Bing Crosby National Pro-Amateur) and the Bob Hope Classic, which is part of the PGA TOUR's FedEx Cup competition.<sup>5</sup> The Kraft Nabisco Championship is one of the four major championships on the LPGA Tour, and has been held at the Mission Hills Country Club in Rancho Mirage, CA since its inception in 1972. The Nature Valley First Tee Open at Pebble Beach is a Champions Tour event that serves as an international showcase for The First Tee, featuring 81 Champions Tour players and 81 junior golfers ages 15-18, along with 162 amateurs.<sup>6</sup> The final event of the season on the Champions Tour, the Charles Schwab Cup Championship, was hosted in 2011 at TPC Harding Park in San Francisco, CA. California host two Nationwide Tour (now Web.com Tour) events: the Fresh Express Classic at TPC Stonebrae (Hayward, CA) and the Soboba Golf Classic, played at The Country Club at Soboba Springs (San Jacinto, CA).

Altogether, the 12 golf events in California generated approximately \$112.05 million in 2011, excluding the tournament purse and costs for TV broadcasting. In comparison, the 16 major tournaments in 2006 generated \$95.8 million (or \$105.2 million in 2011 dollars when adjusted for inflation).

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<sup>4</sup> Major golf championships generate significant economic impact for local economies because of the large number of players, officials, and golf enthusiasts they bring to a state, as well as the money spent on hosting the event. For example, the U.S. Open was played in California three times in the past five years, in 2008 (La Jolla), 2010 (Pebble Beach), and 2012 (San Francisco), where the U.S. Open's economic impact was estimated to range from \$150 million to \$185 million, and drew over 200,000 spectators. Tournament revenues were not included in this study's estimate because the U.S. Open was not played in the state in 2011 (the base year for this analysis).

<http://www.sfgate.com/business/bottomline/article/U-S-Open-brings-millions-to-Bay-Area-economy-3631962.php> and

<http://www.examiner.com/article/u-s-open-s-tourism-impact-for-bay-area-estimated-at-140m-to-170m>.

A Beacon Economics study commissioned by the PGA TOUR found that the Northern Trust Open generated an economic impact of more than \$21 million for Los Angeles County, including the equivalent of 201 full-time jobs with earnings of \$7.4 million and local tax revenues of \$350,000.

<http://www.northerntrustopen.com/tournament/philanthropy.html>.

<sup>5</sup> The Bob Hope Classic was renamed the Humana Challenge in 2012.

<http://www.pgatour.com/2011/tournaments/r002/06/30/humanachallenge/>.

<sup>6</sup> Nature Valley First Tee Open. <http://www.thefirstteeopen.com/tournament/index.php>, accessed October 30, 2012.



California's Major Golf Tournament & State Golf Association Revenues in 2011 (\$ millions)	
<b>Major Tournaments</b>	<b>\$112.0</b>
<b>Associations</b>	<b>\$69.5</b>
<b>TOTAL<sup>1</sup></b>	<b>\$181.5</b>

## Charitable Giving

California's golf industry makes substantial contributions to a variety of charities. At the championship level, the Northern Trust Open generated \$1.6 million in 2011, (and a total of \$53.5 million since the event's inception), benefitting several Los Angeles charities, including The First Tee of Los Angeles County, the Foster Family Picnic, and Ready to Learn, among many others.<sup>7</sup> The AT&T Pebble Beach National Pro-Am, hosted by the Monterey Peninsula Foundation, has raised over \$100 million for charity since 1937, funding youth, education, health, human services, arts, community and environmental programs in the Monterey Peninsula and surrounding areas; the foundation also hosts the Nature Valley First Tee Open at Pebble Beach to benefit The First Tee.<sup>8</sup> The 2011 PGA TOUR's Farmers Insurance Open, organized by the Century Club of San Diego, raised \$1.36 million to benefit 200 charities and schools, including The Boys & Girls Clubs of San Dieguito, the Wounded Warrior Project, Naval Special Warfare Foundation (Navy SEAL), and Semper Fi Fund (U.S. Marines), as well as programs for the homeless, senior services and animal shelters.<sup>9</sup> The Toshiba Classic Champions Tour event is operated by Hoag Hospital Foundation, and generates over \$1,000,000 annually for the Hoag Memorial Hospital Presbyterian's Centers of Excellence, such as the Mary & Dick Allen Diabetes Center, as well as other charities – the Toshiba Classic Scholarship Program has provided over \$249,000 in scholarships and support to local schools and over \$400,000 worth of Toshiba laptops to deserving local high schools and seniors.<sup>10</sup> In 2011 the Kraft Nabisco Championship raised over \$173,000 for charities including the Chinese American Golf Foundation, American Cancer Society (Calif. Division), Women's and Children's

<sup>7</sup> PGA TOUR, "Northern Trust Open raises \$1.6 million for charity," June 14, 2011.

<http://www.pgatour.com/2011/tournaments/r007/06/14/Charity/index.html>.

<sup>8</sup> AT&T Pebble Beach National Pro-Am, "Charitable Organizations," <http://www.attpbgolf.com/charity>, accessed November 6, 2012. Monterey Peninsula Foundation, "Our Mission,"

<http://montereypeninsulafoundation.org/about-us/our-mission.php>, accessed November 6, 2012.

<sup>9</sup> "Century Club, Farmers Insurance Open award \$1.36 million to charities, schools," August 25, 2011.

<http://blog.platinumelitemarketing.com/2011/08/farmers-insurance-open-donates-136.html>

<sup>10</sup> "2011 Kraft Nabisco Championship Raises More Than \$173,000 for Local Charities," June 8, 2011.

<http://www.iwmgmt.com/press-releases/2011-kraft-nabisco-championship-raises-more-than-173000-for-local-charities>.

Crisis Shelter, American Red Cross of Riverside County, Boys & Girls Club of Coachella Valley, and Humane Society of the Desert.<sup>11</sup>

At the local level, the 16th annual El Camino Hospital Golf Tournament, held at Half Moon Bay Golf Links and the Ritz Carlton in Half Moon Bay, CA, generated \$650,000 in 2011 to benefit the El Camino Cancer Center in Mountain View, CA.<sup>12</sup> The Carrington Charitable Foundation's Inaugural Golf Classic was hosted at the Riviera Country Club in Pacific Palisades, CA in 2011, and raised \$350,000 in net proceeds for the Veterans Airlift Command, which provides free air transportation to wounded veterans and their families for medical and other compassionate purposes.<sup>13</sup> Hosted by Morgan Run Club & Resort in Rancho Santa Fe, CA, the 13th Annual Drew Brees Celebrity Championship raised \$181,000 in 2011 for The Brees Dream Foundation, which distributed the funds to Rady Children's Hospital, San Diego Armed Services YMCA, The Friends of Scott Foundation, and The National Multiple Sclerosis Society - Pacific South Coast Chapter. Since the tournament's inception in 1999, it has raised over \$1,000,000 to benefit charities in the San Diego area.<sup>14</sup>

Golf course owners, operators, and golf professionals are happy to serve as access points for annual fundraising by local service organizations. In total, SRI estimates that the amount of charitable giving attributed to the game of golf in California to be \$364.6 million in 2011, up 12.4 percent from 2006, when charitable giving was estimated to be \$324.3 million, slightly outpacing inflation, which was 9.8 percent during that period.

<b>Charitable Giving by California Golf Industry in 2011</b> <b>(\$ millions)</b>	
<b>TOTAL</b>	<b>\$364.6</b>

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<sup>11</sup> Toshiba Classic, <http://www.toshibaclassic.com/charity.aspx>, accessed October 30, 2012.

<sup>12</sup> El Camino Hospital, "Golf Tournament 2011."

[http://www.elcaminohospital.org/About\\_El\\_Camino\\_Hospital/Foundation/Event\\_Photos/Golf\\_Tournament\\_2011](http://www.elcaminohospital.org/About_El_Camino_Hospital/Foundation/Event_Photos/Golf_Tournament_2011).

<sup>13</sup> Carrington Charitable Foundation, "Carrington Charitable Foundation's Inaugural Golf Classic to Benefit the Veterans Airlift Command." <http://www.carringtonhc.com/press/news/11>.

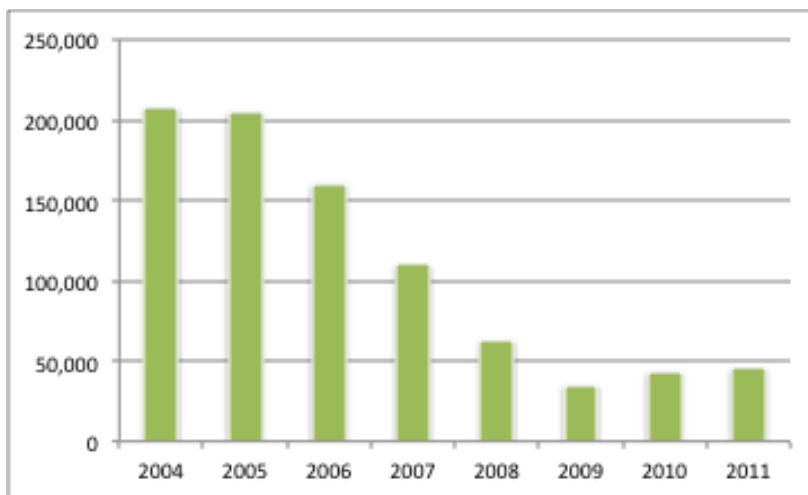
<sup>14</sup> Drew Brees Celebrity Championship. <http://www.celebritychampionship.com/event.htm>, accessed October 30, 2012.

## B. ENABLED INDUSTRIES

### Real Estate

Real estate developers use amenities to attract new home buyers, and golf is a key amenity in many parts of the state. However, California's golf real estate sector has experienced a significant decline relative to 2006. Residential construction in California golf communities followed the rise in the national real estate market, which peaked in 2005 in terms of new home starts and existing home sales and suffered from the recession of 2007-2009.<sup>15</sup> Despite a modest economic recovery, in the past three years California has experienced the lowest level of new home construction in four decades. In 2005, 205,000 permits for new housing units were issued; in 2009, the number of permits issued had fallen to 35,000.<sup>16</sup> Figure 1 shows that in the last three years, the number of California permits issued has remained below 50,000 per year.

Figure 1: Residential Building Permits Issued in California, 2004-11



Source 1: US Census Bureau (2012). Building Permits Survey.

Consequently, in 2011, housing construction remained at record lows in many parts of California, and golf communities were not exempt from the overall housing market trend. SRI identified about a dozen golf communities with new residential construction in 2011. Only a handful of houses were built at many of these, although there were exceptions: several homes were under construction at Aliso Viejo Country Club in Mission Viejo, Ashwood Golf Course in Apple Valley, and the Resort at Pelican Hill in Newport Coast.

<sup>15</sup> National Association of Realtors.

<sup>16</sup> U.S. Census Bureau (2012). Building Permits Survey.

New golf-related real estate construction generated \$269 million in 2011. Furthermore, in 2011 there were an estimated 242 golf communities in California, and SRI estimates the “golf” premium associated with the sale of real estate in these developments to be \$103.5 million. The premium is the additional amount a buyer is willing to pay for a home or property located on a golf course or within a golf community. Both new golf-related residential construction and the realized golf premium were down considerably compared to 2006; new golf-related residential construction totaled \$1.025 billion in 2006, and the golf premium was \$340.2 million. The decline reflects the lingering trouble in the housing market post-recession, characterized by the nearly 60 percent decline in new residential building permits from 2006 to 2011.

<b>California’s Golf Real Estate Revenues in 2011 (\$ millions)</b>	
<b>Golf-Related Residential Construction</b>	<b>\$269.0</b>
<b>Realized Golf Premium</b>	<b>\$103.5</b>
<b>TOTAL</b>	<b>\$372.5</b>

Note: The sale of existing homes is considered a transfer of assets rather than new economic output, so the golf premium that is realized in the sale of an existing home is not included in the economic impact analysis.

**Hospitality/Tourism**

Across the country, golf has enjoyed increasing popularity among travelers, whether it is the primary motivation for a trip or is connected to other recreational time spent with friends and family, or business colleagues. In California, golf is an important tourism segment, alongside the state’s other outdoor and recreational activities such as hiking, biking, sailing, skiing, as well as trips to wine country, state and national parks, and beaches. California’s golf resorts help the state attract conferences and business meetings, and both amateur and professional golf tournaments draw people to courses in different parts of the state. The state’s “Visit California” website features golf as a key recreational activity (<http://www.VisitCalifornia.com>).

In 2011, SRI estimates golf-related tourism spending in California was \$1.379 billion. This is based on the following estimates of golf stays and associated expenditures by California residents and non-residents: (1) an estimated 1,624,000 *day* stays with average golf stay spending of \$88, and (2) an estimated 1,499,000 *overnight* stays with average stay spending of \$825. This represents a slight increase in real terms relative to golf-related tourism spending in 2006, which was \$1.245 billion (or \$1.367 billion in 2011 dollars, when adjusted for inflation); this increase is consistent with the marginal real growth experienced overall in total tourism spending in California, which grew from \$92.4 billion in 2006 (or

\$101.44 billion in 2011 dollars, when adjusted for inflation) to \$102.3 billion in 2011, as the economy recovered from the recession of 2007-09.<sup>17</sup>

<b>California's Golf-Related Travel Expenditures in 2011</b>	
# of day stays	1,624,000
Average travel \$ per day stay	\$87.51
# of overnight stays	1,499,000
Average travel \$ per overnight stay	\$825.02
<b>Total</b>	<b>\$1.379 billion</b>

Note: Numbers do not sum due to rounding.

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<sup>17</sup> Dean Runyan Associates (2012). *California Travel Impacts by County, 1992-2010; 2011 Preliminary State & Regional Estimates*. Prepared for the California Travel and Tourism Commission. <http://industry.visitcalifornia.com/Research/California-Statistics-and-Trends/>.

## **GOLF'S ECONOMIC IMPACT IN CALIFORNIA**

Golf's impact on California's economy includes both the direct effects of economic activity in the core and enabled golf industries, as well as the indirect and induced (or multiplier) effects on other industries in the state economy. In economics, the idea of the multiplier is that changes in the level of economic activity in one industry impacts other industries throughout the economy. For example, a fraction of each dollar spent at a golf course is, in turn, spent by the golf course to purchase goods and services for golf course operation—these are indirect effects. In addition, golf course employees spend their disposable income on personal goods and services, and this stimulates economic activity in a myriad of other industries—these are induced effects.

Therefore, golf's total (direct plus multiplier) economic impact includes both the direct employment and wage income of those employed in golf-related industries, as well as the secondary employment and wages supported in other sectors of the economy through subsequent purchases of goods and services by golf industry employees.

In 2011, the \$6.345 billion California golf industry supported:

- A total economic impact of \$13.132 billion for the state of California including the indirect and induced economic impacts stimulated by golf sector activity;
- A total employment impact of over 128,300 jobs; and
- Total wage income of \$4.060 billion.

<b>Golf's Impact on California's Economy (2011)</b>						
<b>INDUSTRY</b>	<b>DIRECT (\$ millions)</b>	<b>INDIRECT</b>	<b>INDUCED</b>	<b>TOTAL OUTPUT (\$ millions)</b>	<b>TOTAL JOBS</b>	<b>TOTAL WAGE INCOME (\$ millions)</b>
Golf Facility Operations	\$3,343.3	→		\$7,119.6	80,149	\$2,251.7
Golf Course Capital Investment*	\$144.5	→		\$19.5	137	\$6,494.2
Golf-Related Supplies	\$923.8	→		\$1,890.3	12,043	\$525.3
Tournaments & Associations	\$181.5	→		\$447.5	3,956	\$156.6
Real Estate **	\$372.5	→		\$628.9	4,405	\$209.0
Hospitality/Tourism	\$1,379.3	→		\$3,026.0	27,650	\$911.2
<b>TOTAL</b>	<b>\$6,344.8</b>	<b>→</b>		<b>\$13,131.9</b>	<b>128,340</b>	<b>\$4,060.4</b>

Note: Columns may not sum due to rounding. To calculate golf's total economic impact, SRI subtracted from the direct golf economy impact of \$6.345 billion the portion of capital investment that is investment in existing facilities (\$136.1 million of \$144.5 million) and the portion of real estate that is the realized golf premium associated with the sale of real estate in existing developments (\$103.5 million of \$372.5 million). This is because:

\*Golf course capital investments—Only new course construction has an indirect and induced economic impact. Other types of facility capital investment are typically financed through facility revenues and, therefore, are omitted to avoid double-counting.

\*\*Real Estate—Only golf residential construction has an indirect and induced impact. The golf premium associated with golf real estate is considered a transfer of assets rather than new economic activity.

Numbers in columns may not sum due to rounding.



The following table compares changes in the golf industry’s direct and total economic impact on the California economy in 2006 and 2011. In 2006, the golf economy was \$6.871 billion buoyed by strong residential construction and consumer spending and the overall health of the U.S. economy. In 2011, the direct golf economy contracted to \$6.345 billion due primarily to significant declines in golf real estate and golf capital investment, including new course construction. The table shows the related declines in total economic output, employment, and wage income associated with the lower level of direct economic activity supported by the game of golf.

<b>Golf’s Impact on the California Economy in 2006 and 2011</b>		
	<b>2006</b>	<b>2011</b>
<b>Core and Enabled Industries</b>		
Direct Economic Impact (\$ billions)	\$6.871	\$6.345
Total Output Impact (\$ billions)	\$15.102	\$13.132
Total Jobs Impact	159,992	128,340
Total Wage Income Impact (\$ billions)	\$4.838	\$4.060

## GOLF'S ENVIRONMENTAL IMPACT IN CALIFORNIA

Water is an important resource for the California golf industry, as in many other industries—e.g., food processing, agriculture, hotels, and restaurants, etc. However, in California, a larger share of the population is located in the Southern part of the state, which has less annual rainfall and requires more water to sustain green landscapes and plant growth. Therefore, care of the land, especially as it relates to the use of precious water resources, is paramount for the golf industry and local communities.

### Land and Water Use

California golf facilities fall into three agronomic regions: Pacific, Upper West/Mountain, and Southwest. Water requirements vary based on region, with 13 percent of Pacific facilities, 25 percent of Upper West/Mountain facilities, and 31 percent of Southwest facilities irrigating with water from municipal or public water systems, according to the Environmental Institute for Golf survey data.<sup>18</sup> The majority of facilities draw water from a combination of surface runoff, open water lakes and ponds, rivers and streams, onsite wells, and recycled sources.

Golf courses represent approximately 3.5 percent of the total turfgrass in California (most turfgrass acreage is associated with home and commercial landscapes, parks, schools, sports fields, and right of ways).<sup>19</sup> Golf courses consume approximately 1.2 percent of the total water consumed for crop irrigation in California, and account for less than 1 percent of total fresh water used in the state.<sup>20</sup> The figure below illustrates golf's relative water usage from the most recent data available from the United States Geological Survey.<sup>21</sup>

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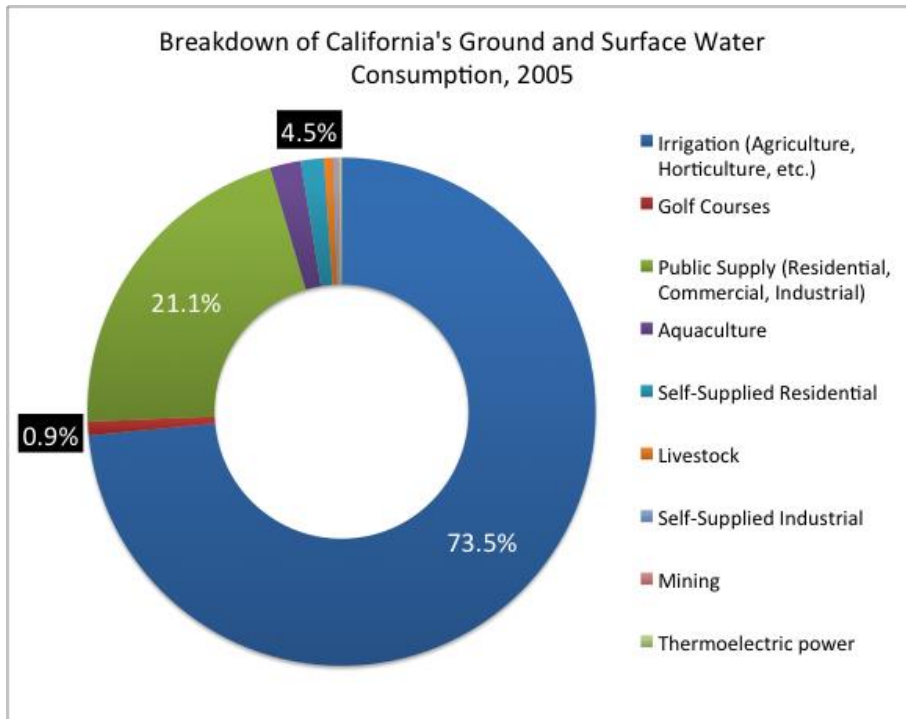
<sup>18</sup> Golf Course Superintendents Association of America, Environmental Institute for Golf (2009). *Golf Course Environmental Profile: Volume II, Water Use and Conservation Practices on U.S. Golf Courses*. Lawrence, KS: Golf Course Superintendents Association of America.

<sup>19</sup> Melisi, C., Running, S.W., Elvidge, C.D., Dietx, J.B., Tuttle, B.T., Nemani, R.R. (2005). "Mapping and Modeling the Biochemical Cycling of Turf Grasses in the United States." *Environmental Management*, Vol. 36(3), pages 426-438.

<sup>20</sup> Source for golf course water consumption: SRI calculation based on survey data from Golf Course Superintendents Association of America, Environmental Institute for Golf (EIFG) (2009). *Golf Course Environmental Profile, Volume II: Water Use and Conservation Practices on U.S. Golf Courses*.

<sup>21</sup> United States Geological Survey, USGS (2012). *Estimated Use of Water in the U.S. in 2005*. Retrieved December 6, 2012: <http://water.usgs.gov/watuse>.

Figure 2: Breakdown of California's Ground and Surface Water Consumption, 2005



Sources 2:

Source for golf course water consumption: SRI calculation based on survey data from Golf Course Superintendents Association of America, Environmental Institute for Golf (EIFG) (2009). *Golf Course Environmental Profile, Volume II: Water Use and Conservation Practices on U.S. Golf Courses*.

Source for other types of water consumption: U.S. Geological Survey (2009). *Estimated Use of Water in the United States in 2005*. Latest available data. The release of 2010 data is anticipated to be in the 2014-2015 timeframe.

Estimating the total water use for California golf courses involved three steps:

- 1) SRI estimated the percentage of facilities and 18-hole equivalents in each of the three major agronomic regions. SRI used databases from the PGA Sections and the state golf associations to create a comprehensive list of California golf facilities. The total number of 18-hole equivalent facilities comes from the NGF.<sup>22</sup> Facility locations were mapped for the entire state to estimate the percentage of facilities and the number of 18-hole equivalents for each major agronomic region.
- 2) SRI estimated total and irrigated acreage in each region. Total acreage and irrigated acreage by agronomic region was based on the GCSAA's *Golf Course Environmental Profile, Volumes I and II*

<sup>22</sup> NGF (2012). *Golf Facilities in the U.S.* Jupiter, FL: The National Golf Foundation.

(2007, 2009).<sup>23</sup> Based on this research, SRI estimated 150 acres per 18-hole equivalent to yield a total of 136,500 golf facility acres and 95,805 irrigated acres (irrigated acreage is different for each region). Irrigated acreage includes tees, fairways, greens, rough, practice areas, and clubhouse landscapes. It does not include non-turf landscapes, such as non-irrigated woodlands or grasslands, water bodies, bunkers, buildings, parking lots, and roads and trails. Irrigated acreage represents approximately two-thirds of the acreage on a golf facility. The gross facility acreage and irrigated acreage is similar to previous research on California golf facilities, in spite of the different estimation methods.<sup>24</sup> This is also consistent with earlier research by SRI International (2008) indicating that the number of facilities and the number of 18-hole equivalents have not changed significantly in the last decade.<sup>25</sup> The current calculations are presented in the table below.

<b>California Golf Facility Irrigated Acreage by Agronomic Region</b>				
<b>AGRONOMIC REGION</b>	<b>PERCENTAGE OF FACILITIES</b>	<b>18-HOLE EQUIVALENT ESTIMATE</b>	<b>AVERAGE IRRIGATED ACREAGE</b>	<b>TOTAL IRRIGATED ACREAGE ESTIMATE</b>
Pacific	23.2%	211	84	17,724
Upper-West Mountain	21.1%	192	103	19,776
Southwest	55.7%	507	115	58,305
<b>California Total</b>	<b>100%</b>	<b>910</b>	<b>-</b>	<b>95,805</b>

Source: SRI calculations based on survey data from:

Golf Course Superintendents Association of America, Environmental Institute for Golf (EIFG) (2007). *Golf Course Environmental Profile, Volume I: Water Use and Conservation Practices on U.S. Golf Courses*.

EIFG (2009). *Golf Course Environmental Profile, Volume II: Water Use and Conservation Practices on U.S. Golf Courses*.

<sup>23</sup> Golf Course Superintendents Association of America, Environmental Institute for Golf (2007). *Golf Course Environmental Profile: Volume I, Property Profile and Environmental Stewardship of Golf Courses*. Lawrence, KS: Golf Course Superintendents Association of America.

Golf Course Superintendents Association of America, Environmental Institute for Golf (2009). *Golf Course Environmental Profile: Volume II, Water Use and Conservation Practices on U.S. Golf Courses*. Lawrence, KS: Golf Course Superintendents Association of America.

<sup>24</sup> Templeton, S.R., Henry, M.S. Bihui, J., Zilberman, D. (2002). *Economic Impacts of California's Golf Course Facilities in 2000*. Research Report RR-02-01, Department of Agricultural and Applied Economics, Clemson University and Department of Agricultural and Resource Economics, University of California, Berkeley.

Templeton, S.R., Zilberman, D., Henry, M.S. (2010). "Golf Courses in California as Modern Agricultural Enterprises." *Agricultural and Resource Economics Update*, Vol. 13(3). Gianini Foundation of Agricultural Economics, Berkeley CA: University of California.

<sup>25</sup> SRI International (2008). *The California Golf Economy 2006*. Arlington, VA: SRI International.

- 3) Next, SRI estimated total water use for the irrigated acreage. Estimated water use per acre per year, by region was based on GCSAA research.<sup>26</sup> 95,805 irrigated acres required approximately 324,246 acre-feet of water. Similar to the uneven population distribution and water use in California, the Southwest Region has the greatest portion of irrigated acreage and applies more water per acre. Estimated total water use calculations are presented in the table below.

<b>California Golf Facility Water Use</b>			
<b>AGRONOMIC REGION</b>	<b>TOTAL IRRIGATED ACRES</b>	<b>ESTIMATED WATER USE PER ACRE *</b>	<b>TOTAL WATER USE BY REGION*</b>
Pacific	17,724	1.9	33,675.6
Upper-West Mountain	19,776	2.9	57,350.4
Southwest	58,305	4.0	233,220
<b>California Total</b>	<b>95,805</b>	<b>-</b>	<b>324,246</b>

\* Acre-feet per year

Source: SRI calculations based on research from:

Lyman, G.T. (2007). "Golf Course Land Use, Water Use, and Conservation." Presentation at the Irrigation Association Conference, San Diego, CA.

Golf Course Superintendents Association of America, Environmental Institute for Golf (2009). *Golf Course Environmental Profile: Volume II, Water Use and Conservation Practices on U.S. Golf Courses.*

Throssell, C.S., Lyman, G.T., Johnson, M.E., Brown, C.D. (2009). "Golf course environmental profile measures water use, source, cost, quality, and management and conservation strategies." *Applied Turfgrass Science.*

## Revenue Per Unit of Land and Water

In 2011, golf courses produced significant economic returns in comparison to other agricultural commodities that require irrigation. The table below illustrates economic output per unit of land and water, for a sample of crops, all crops, and golf facilities for 2011. Estimates of irrigated crop acreage and applied water are based on the most recent data available from the Agricultural Water Use Collection Program data and the Agricultural Water Use Model administered by the California

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<sup>26</sup> Lyman, G.T. (2007). "Golf Course Land Use, Water Use, and Conservation." Presentation at the Irrigation Association Conference, San Diego, CA.

Golf Course Superintendents Association of America, Environmental Institute for Golf (2009). *Golf Course Environmental Profile: Volume II, Water Use and Conservation Practices on U.S. Golf Courses.*

Throssell, C.S., Lyman, G.T., Johnson, M.E., Brown, C.D. (2009). "Golf Course Environmental Profile Measures Water Use, Source, Cost, Quality, and Management and Conservation Strategies." *Applied Turfgrass Science.*

Department of Water Resources (2005, 2012).<sup>27</sup> This model estimated that approximately 27 million acre-feet of water was used for agriculture. A study by The Center for Irrigation Technology (2011), estimated that average agricultural use over an eight-year period was approximately 33 million acre-feet of applied water.<sup>28</sup> Crop revenue data was provided by the USDA National Agricultural Statistics Service, California Field Office.<sup>29</sup>

This analysis includes only green grass golf facility revenues, and excludes capital expenditures, or revenues associated with golf equipment manufacturing, charitable giving, tourism, or real estate. The table below illustrates that revenues per acre and per acre-ft of water are substantially higher than those for many irrigated crops, resulting in much greater economic output, jobs, taxes, etc. per input unit of land and water.

<b>California Water Use and Economic Return Comparisons</b>				
<b>CROP EXAMPLES</b>	<b>IRRIGATED ACREAGE</b>	<b>2011 REVENUE (000s)</b>	<b>REVENUE PER IRRIGATED ACRE</b>	<b>REVENUE PER ACRE-FT OF WATER</b>
Grapes (all)	867,000	\$3,857,439	\$4,449	\$2,617
Almonds and pistachios	799,000	\$4,746,000	\$5,939	\$1,747
Rice	575,000	\$852,590	\$1,482	\$297
Tomatoes (all)	349,000	\$1,264,936	\$3,624	\$1,529
All grain, fruit, nut, vegetable crops	8,422,490	\$27,491,777	\$3,264*	\$1,136*
All farming	9,244,500	\$47,422,784	\$5,129	\$1,427
Golf courses	95,805	\$3,382,878	\$34,266	\$10,124

\* Excluding pasture.

Sources: SRI calculations based on data from:

Golf Course Superintendents Association of America, Environmental Institute for Golf (EIFG) (2009). *Golf Course Environmental Profile, Volume II: Water Use and Conservation Practices on U.S. Golf Courses*.

California Department of Water Resources (2005). *Agricultural Water Use Model*.

U.S. Department of Agriculture National Agricultural Statistics Service (2011). *California Agricultural Statistics*.

<sup>27</sup> California Department of Water Resources (2005). *Agricultural Water Use Collection Program Data*. Retrieved December 3, 2012. Sacramento, CA: California Department of Water Resources.

California Department of Water Resources (2011). *Agricultural Water Use Model Description*. Sacramento, CA: California Department of Water Resources.

<sup>28</sup> Center for Irrigation Technology (2011). *Agricultural Water Use in California: A 2011 Update*. California State University Fresno, CA: Center for Irrigation Technology.

<sup>29</sup> USDA National Agricultural Statistics Service (2012). *California Agricultural Statistics, Crop Year 2011*. Sacramento, CA: USDA California Field Office.

## **Sustainability and Environmental Stewardship**

Providing significant economic returns and jobs for California citizens is only part of the equation for an industry to thrive in the Golden State. Golf course owners, operators, and allied golf organizations must be conscientious stewards of the land and water resources required to sustain the industry and provide recreational opportunities to millions of Californians. In this light, the golf industry has aggressively pursued conservation strategies to minimize its environmental footprint and reduce water consumption. This is particularly important in Southern California where many golf facilities are required to participate in water conservation programs and document reduced usage.<sup>30</sup> Moreover, beyond regulatory requirements, costs associated with water, managing water systems, and the associated labor, continue to increase and remain a major expense for golf facilities. Therefore, it makes good business sense to conserve water while maintaining high-quality turf and landscapes on golf properties. Examples of strategies employed to enhance environmental stewardship and make the game of golf more sustainable in local communities are discussed below.

**Improving Water Systems and Irrigation Practices with Technology.** A major focus of golf course superintendents and course maintenance professionals involves maintaining and improving irrigation control and water distribution systems. Many technologies such as on-site weather stations and central control computers use site-specific weather and evapotranspiration data to adjust daily irrigation. These systems can also manage the time of water application to focus on “off-peak” demand periods for water and power. In addition, wireless soil monitoring systems and portable handheld moisture sensors can provide superintendents with real-time data to help eliminate overwatering. Combining these technologies with deep and infrequent watering, maintaining systems to improve distribution uniformity, and the use of wetting agents and growth regulators, can substantially reduce water usage.<sup>31</sup>

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<sup>30</sup> California Department of Water Resources (2010). *20 x 2020 Water Conservation Plan*. Sacramento, CA: California Department of Water Resources.

California Environmental Protection Agency (2009). *Municipal Wastewater Recycling Survey*. Sacramento, CA: CEPA State Water Resources Control Board.

[http://www.waterboards.ca.gov/water\\_issues/programs/grants\\_loans/water\\_recycling/munirec.shtml](http://www.waterboards.ca.gov/water_issues/programs/grants_loans/water_recycling/munirec.shtml).

County of Los Angeles Department of Parks and Recreation (2009). “A Conversation on the Successful Use of Recycled Water and Drought Tolerant Plants in Park Settings.” Proceedings of the 2009 Conservation Forum, Los Angeles, CA.

Metropolitan Water District of Southern California (2012). *A Progress Report to the California State Legislature: Achievements in Conservation, Recycling and Ground Water Recharge*. Los Angeles, CA: Metropolitan Water District of Southern California.

Williams, B.R. (2012). *An L.A. Story. Golf Course Industry*. Retrieved December 11, 2012: <http://www.golfcourseindustry.com/gci0712-golf-courses-water-needs.aspx>.

<sup>31</sup> Horton, T., Huck, M., & Stowell, L. Personal Communication, December 2012.



**Increasing Use of Recycled Water.** According to the California State Water Resources Control Board, golf course use of recycled water is increasing and was 43,600 acre-feet in 2009—approximately 14 percent of the annual requirement for irrigated turf on golf course.<sup>32</sup> A greater portion of recycled water is likely to be used in urban areas, such as in targeted golf courses and other urban landscapes in the greater Los Angeles area.<sup>33</sup> This occurs due to the proximity of urban golf courses to water treatment and recycling plants and the challenges of distributing the water over long distances from urban landscapes without a well-developed pipeline infrastructure in place.<sup>34</sup>

**Use of Drought-Resistant Grasses.** Where appropriate, using drought-resistant varieties of grass, such as Bermudagrass, on portions of golf courses, as well as in more arid regions of the state, helps to conserve water.

**Coordinating with Environmental and Regulatory Organizations.** More than ever, golf course owners and superintendents are reaching out to local, state, and national organizations focused on environmental conservation and regulation.<sup>35</sup> The sustainability of many golf courses means coordinating with the community at large to solve challenging environmental problems. For example, 33 California golf courses have become certified Audubon sanctuaries because of their efforts to engage the local community, protect the local environment, conserve natural resources, and provide/improve wildlife habitats.<sup>36</sup>

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Williams, B.R. (2012). *An L.A. Story. Golf Course Industry*. Retrieved December 11, 2012: <http://www.golfcourseindustry.com/gci0712-golf-courses-water-needs.aspx>.

<sup>32</sup> California Environmental Protection Agency (2009). *Municipal Wastewater Recycling Survey*. Sacramento, CA: CEPA State Water Resources Control Board.

[http://www.waterboards.ca.gov/water\\_issues/programs/grants\\_loans/water\\_recycling/munirec.shtml](http://www.waterboards.ca.gov/water_issues/programs/grants_loans/water_recycling/munirec.shtml).

<sup>33</sup> County of Los Angeles Department of Parks and Recreation (2009). "A Conversation on the Successful Use of Recycled Water and Drought Tolerant Plants in Park Settings." Proceedings of the 2009 Conservation Forum, Los Angeles, CA.

Metropolitan Water District of Southern California (2012). *A Progress Report to the California State Legislature: Achievements in Conservation, Recycling and Ground Water Recharge*. Los Angeles, CA: Metropolitan Water District of Southern California.

<sup>34</sup> UCLA Institute of the Environment and Sustainability (2009). *Graywater: A Potential Source of Water*. Retrieved December 6, 2012: <http://www.environment.ucla.edu/reportcard/article.asp?parentid=4870>.

<sup>35</sup> National Golf Course Owners Association (2008). *Troubled Waters: Golf's Future in a Thirsty World*. Charleston, SC: National Golf Course Owners Association.

<sup>36</sup> Audubon International (2012). Audubon Cooperative Sanctuary Program for Golf: Certification Criteria and California Certified Courses. Retrieved December 5, 2012: <http://auduboninternational.org/acsp-golf-certified?&tab=1>.

Collaboration between the Los Angeles Department of Water and Power and the Golf Industry Water Conservation Task Force has reduced potable water consumption by 20 percent by identifying and implementing specific water conservation strategies. Success in this working relationship has caused other water regulatory agencies to consider similar initiatives.<sup>37</sup> Coordinating with these types of organizations to proactively solve challenges related to water consumption presents a better alternative than responding to potential fines and sanctions on water use.

**Managing Customer Expectations.** As the industry grew rapidly in the 1980's and 1990's, courses increased in length and difficulty, and added more expansive, manicured landscapes requiring additional water and overall maintenance to meet customer demands. With greater awareness of conservation and emphasis on environmental stewardship, course owners and operators need to communicate that courses can remain in excellent "playable" condition with fewer irrigated and highly maintained acres. They have to encourage consumers to expect and accept features such as more natural landscapes, an increase in non-irrigated areas typically in the rough or out of play, and firmer ground on fairways in less common landing areas. Irrigating less acreage and using water primarily on landing areas, teeing grounds, and greens during the summer can substantially reduce water consumption.

**Investing in Continuing Education and Research.** California Golf Course Superintendents and turfgrass specialists are well-educated in land and water conservation issues and water-saving technologies and practices. They participate in pre-service and ongoing education and training focusing on efficient turf management, integrated pest management, water management and conservation, and the application and control of plant nutrients.<sup>38</sup> They regularly interact with university agricultural extensions, turfgrass organizations, and water resource agencies to stay abreast of current research and best practices. They also participate on local and state committees addressing challenges associated with water and other environmental concerns.

Golf courses provide many benefits to local communities in California. These benefits include appealing landscapes and green spaces that provide social and recreational opportunities as well as substantial economic impact for communities throughout the state. The California golf industry is also responding to the call for environmental stewardship. This stewardship must involve the combined efforts of golf course owners, operators, environmental and regulatory agencies, and input from local communities, to enhance golf's sustainability and to benefit the people of California well into the future.

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<sup>37</sup> Williams, B.R. (2012). *An L.A. Story. Golf Course Industry*. Retrieved December 11, 2012: <http://www.golfcourseindustry.com/gci0712-golf-courses-water-needs.aspx>.

<sup>38</sup> Golf Course Superintendents Association of America, Environmental Institute for Golf (2009). *Golf Course Environmental Profile: Volume III, Nutrient Use and Management on U.S. Golf Courses*. Lawrence, KS: Golf Course Superintendents Association of America.

## DETAILED METHODOLOGY & DATA SOURCES

A key challenge in this study was to identify reliable state-level data sources and to develop methodologies for measuring the size of industry components for which cross-state estimates do not exist in straightforward metrics, e.g., golf real estate and off-course purchases of golf apparel and equipment. This section describes each of the core and enabled industries included in the golf economy and SRI's approach to measuring each of these segments.

### A. GOLF FACILITY OPERATIONS

For this industry segment, we analyzed the number of golf facilities and average facility revenue data to derive a total facility operations estimate. Revenues for this segment include: annual or monthly membership fees, green fees, range fees, and golf car rental fees; purchases of golf apparel and equipment in pro shops; golf lessons; tournament entry fees; consumption of food and beverages; etc.

**Number of golf course facilities.** Many golf organizations track the number of golf facilities in a state: the National Golf Foundation (NGF), The PGA of America, and state/regional golf associations, among others. The U.S. Census Bureau also surveys golf facilities as business establishments in its Economic Census every five years. However, these organizations' calculations of the total numbers of golf facilities in each state, by type of facility, are not always consistent with each other due to: (1) absence of data for courses which are not members (e.g., The PGA tracks those courses with a PGA member) or for particular subsets of courses (e.g., municipal facilities and golf resorts are not tracked by the Census), (2) facility closures and openings, and (3) inconsistency in the classification of courses, especially resorts.

In some surveys, golf facilities are allowed to self-classify. In others, the surveying organization classifies the facility based on specific criteria. This can mean the difference between a small number of resorts (e.g., a figure that includes five-star accommodation located on or adjacent to an 18-hole course) or a much larger number of resorts (e.g., three-star hotel accommodation located near a daily fee golf course). Similarly, a resort with two 18-hole golf courses could be counted as two golf facilities or as one depending on the reporting organization. Fortunately, the variation in the number of facilities caused by these data collection methods are very small, and thus do not materially impact the overall analysis. The table below presents slightly differing estimates for the number of golf course facilities in California in 2011 or the latest available year.

### Estimates of California Golf Facilities from Various Sources, 2007-2011

	2007 Economic Census (# of facilities, excl resorts & municipal) <sup>1</sup>	2011 PGA (# of facilities) <sup>2</sup>	2011 NGF (# of facilities) <sup>3</sup>	2011 NGF (# of 18-hole equivalent courses) <sup>3</sup>
PRIVATE	155	283	274	291
PUBLIC	619	597	557	519
Daily fee/ semi-private		397		
Municipal Military University		200		
RESORT		58	90	99.5
<b>TOTAL</b>	<b>774</b>	<b>938</b>	<b>921</b>	<b>909.5</b>

Sources: <sup>1</sup> U.S. Census Bureau, *2007 Economic Census*.

<sup>2</sup> Professional Golfers' Association of America (2012). *Facility Database*.

<sup>3</sup> NGF (2012). Total Facility Supply Tables 6-14, *Golf Facilities in the U.S., 2011 edition*, pp.6-14.

The PGA of America and NGF data fall within a fairly narrow range, PGA's 938 vs. NGF's 921. Based on consultation with the task force, SRI used the NGF data for our analysis, which demonstrate a slight contraction in total facilities from 2006 (926 facilities) to 2011 (921 facilities, comprised of 274 private facilities, 557 public facilities, and 90 golf resorts). SRI used the PGA facilities from 2011 to break out the 557 public facilities proportionately into 360 daily fee facilities and 197 municipal/military/university facilities.

**Average revenues per facility.** The SRI team collected average revenue data from a variety of sources. Here again, the data challenge was that average facility revenues will vary significantly depending on: (1) the number of holes (e.g., a 9-hole course versus a 18-hole course) and (2) the type of facility—whether a golf course facility is private, daily fee, resort, municipal, etc.

The U.S. Census Bureau collects revenue data for golf course facilities as part of its Economic Census of all U.S. establishments every five years. Whereas facility surveys conducted by private sector organizations are often based on lower response rates (less than 30 percent), all establishments are required by law to respond to the Census Bureau survey. However, the Census Bureau data has several limitations. Many types of facilities are not included in the survey: (1) resort facilities, (2) municipal and military facilities, (3) stand-alone driving ranges and (4) golf facilities without payroll. The latest 2007 Economic Census contains revenue, payroll, and employment data on 12,193 golf facilities broken down

by state. This provides a robust estimate with which to compare other available golf facility revenue data.

The PGA collects revenue data for all 50 states on an annual basis through its Annual Operations Survey. The latest available data are from 2011, but the PGA has annual data going back to 2005. In addition, PGA revenue data are broken down by type of facility for categories for which Census data are not available—namely, resorts, municipal courses, and military courses.

<b>Estimates of California Average Revenue per Facility Data From Different Sources, 2007-2011</b>						
	<b>Census (2007)<sup>1</sup></b>	<b>PGA (2007)<sup>2</sup></b>	<b>PGA (2008)<sup>3</sup></b>	<b>PGA (2009)<sup>4</sup></b>	<b>PGA (2010)<sup>5</sup></b>	<b>PGA (2011)<sup>6</sup></b>
<b>Private facility</b>	\$5,764,761	\$5,057,193	\$5,241,380	\$4,781,185	\$5,214,113	\$5,564,309
<b>Daily fee facility</b>	\$2,703,472	\$3,504,384	\$3,542,078	\$3,019,133	\$3,020,256	\$3,262,123
<b>Resort facility</b>	X	\$2,600,884	\$4,738,068	\$3,180,551	\$3,208,616	\$3,810,639
<b>Municipal/ military/ university facility</b>	X	\$2,408,843	\$3,289,579	\$3,071,166	\$2,787,637	\$2,563,687
<b>Driving range</b>	X	X	X	X	X	\$400,000
<b>Miniature golf</b>	\$387,277	X	X	X	X	X

Sources: <sup>1</sup> U.S. Census Bureau, *2007 Economic Census*.

<sup>2</sup> Professional Golfers' Association of America (2008). *2007 Operations Survey*.

<sup>3</sup> Professional Golfers' Association of America (2009). *2008 Operations Survey*.

<sup>4</sup> Professional Golfers' Association of America (2010). *2009 Operations Survey*.

<sup>5</sup> Professional Golfers' Association of America (2011). *2010 Operations Survey*.

<sup>6</sup> Professional Golfers' Association of America (2012). *2011 Operations Survey*. Note the driving range revenue estimate is the 2011 median revenue at the national level.

Average revenue data from the Census (2007) and The PGA (2007-2011) are presented above. In consultation with the task force, SRI calculated total private, daily fee, municipal/military/university, and resort facility revenues using the 2011 PGA survey data. Driving range revenues were calculated using 2011 PGA survey data, which estimated the national median revenue figure for golf ranges in 2011, and average miniature golf facility revenue was calculated using the 2007 Census data.

The PGA estimate for average private facility revenue in 2011, \$5,564,309, is significantly higher than the average estimated in 2006, which was \$4,086,918. (Note that the estimates for average private, daily fee, municipal/military/university, and resort facility revenues used by SRI in the 2006 study are based on averages of the corresponding 2005 and 2006 PGA estimates.) Reviewing the 2005-2011 PGA

estimates of average revenue for private facilities, suggests the 2005/2006 PGA estimate may have been conservative. According to the Census and PGA surveys, 2007 reflected a significant increase in revenues for private facilities with a recessionary dip in 2008-09, and a subsequent recovery in 2010-11.

Average facility revenue for daily fee facilities remained flat, when comparing the 2011 estimates against 2006 inflation-adjusted estimates. The PGA estimate for average daily fee facility revenue in 2011 was \$3,262,123, which is comparable to the 2005/2006 PGA average of \$3,016,026. The PGA estimate for average municipal/military/university facility revenue in 2011 was \$2,563,687, which is slightly higher than the 2005/2006 PGA average of \$2,142,917. The average resort facility revenue reported in 2011 by The PGA, \$3,810,639, is somewhat lower than the 2005/2006 estimate, which was \$4,368,498, reflecting the weaker economic conditions, which may have affected resorts more than public and private facilities. Standalone golf ranges and miniature golf facilities also experienced significant declines in their revenues: The PGA median value for standalone golf range revenue was \$400,000 in 2011, which is lower than the 2006 estimate of \$618,594. The average miniature golf facility revenue was estimated to be \$413,010 in 2011, after adjusting the Census 2007 figure for inflation, reflecting a decline relative to the 2006 estimate of \$498,038.

To calculate golf facility operations revenues, SRI subtracted average on-course merchandise sales from the average golf facility revenue estimates because on-course merchandise sales are included in the Golf-Related Supplies industry segment. SRI then multiplied these adjusted average golf facility operations revenue estimates by the respective number of golf facilities. Overall, SRI estimates that California’s 921 golf courses, 84 stand-alone ranges, and 65 miniature golf facilities generated \$3.343 billion of revenue in 2011. This reflects an increase relative to 2006, when facility operations revenue totaled \$2.846 billion for the 926 facilities. This increase in facility operations revenue from 2006 to 2011 is driven by an increase in average private facility revenue, but is also likely due to a conservative estimate of private facility revenue in 2006.

**B. GOLF COURSE CAPITAL INVESTMENT**

To calculate golf course capital investments, SRI collected data on two major types of investment: (1) capital investment at existing facilities and (2) new course construction.

California Golf Facility Capital Investment and New Course Construction in 2011 (\$ millions)	
<b>Golf Course Capital Investment<sup>1</sup></b>	<b>\$136.1</b>
<b>New Course Construction</b>	<b>\$8.4</b>
<b>TOTAL</b>	<b>\$144.5</b>

Note: <sup>1</sup> Only the New Course Construction category is included in the economic impact analysis, because it represents new economic output or activity. Golf facility capital investment is typically

financed through golf facility revenues, so including both Golf Facility Capital Investment and Golf Facility Operations in economic impact analysis would result in double-counting.

**Investment at existing courses.** Golf facility capital investment includes improvements to greens and tees, repaving of cart paths, purchases of new turf maintenance equipment and irrigations systems, and renovations of the clubhouse, pro shop and maintenance buildings. Ordinary maintenance expenses are not included. SRI examined golf facility capital investment data from two sources: NGF and the GCSAA. The GCSAA data comes from golf facility capital budget questions included in its 2011 Compensation Survey. The data is state-level and includes the mean, median and standard deviation of capital expenditures (not maintenance expenses). The NGF's *2011 Operating and Financial Performance Profile* presents national estimates of capital expenditures (and also breaks out maintenance expenses separately) at: (1) daily fee facilities (average revenue of \$1,457,700, with 69.6% of daily fee facilities making average capital improvement investments of \$131,700); (2) municipal facilities (average revenues of \$1,269,100, with 70.2% of municipal facilities making average capital investments of \$189,300); and (3) private facilities (average revenues of \$3,277,000, with 82% of private facilities making capital investments of \$410,400).

After review of both the state-level and national data sets, SRI used the GCSAA's data for California in our capital investment calculations. The data indicate that, on average, a California golf facility invested approximately \$139,648, in 2011 for a total capital investment of \$128.6 million. In addition, SRI added the estimate of major renovation projects (\$7.5 million) to its estimate of golf course capital investment in California in 2011, resulting in a total of \$136.1 million. Relative to 2006, capital investments were down significantly (the economic recession began in 2007 and ended in 2009, with a sluggish recovery). In 2006, California's total golf facility capital investment was \$161.7 million (or \$177.5 million in 2011 dollars when adjusted for inflation).

**New course construction.** The NGF's *Golf Facilities in the U.S.* series is the only national source for estimates of the number of new golf courses under construction in each state. In 2011, NGF estimated that there were no new 18-hole equivalent golf course openings in California and that 1.0 was under construction.

An estimate for the average investment for each new golf course in California is derived from the Golf Course Builders Association of America's *Golf Course Construction and Renovation Costing Guide, Version 6*. This database of golf course construction costs is based on a survey of golf course builders around the country. Using the values provided for California and the average ("normal") costs for each of the various construction categories (see box below), GCBA estimates the average investment required to build a new golf course in California is \$8.4 million (the average estimate across the various regions of California). However, according to golf course architecture and design consultants, golf course construction alone accounts for only half of the total cost of constructing a new golf facility. An equal amount is spent on the architectural/engineering services, construction of the clubhouse, proshop, and



maintenance buildings, and initial purchase of equipment and course amenities, etc. Therefore, we estimate the average cost of constructing a new 18-hole facility to be \$16.7 million.

To Build a Golf Course: Required Investments	
Mobilization	Greens Construction
Layout and Staking	Tees
Erosion Control	Bunkers
Clearing	Bridges
Selective Clearing	Bulkheading
Topsoil	Cart Paths
Excavation	Fine Grading
Rough Shaping	Seeding and/or Grassing
Drainage	
Irrigation	

This investment, however, is not entirely expended over one year but is rather disbursed over several years. Assuming the average course takes approximately two years to complete, we estimate the average investment in construction per 18-hole equivalent course per year was \$8.4 million. We applied this figure to one 18-hole equivalent course under construction in 2011. In total, SRI estimates that 2011 investment in new course construction in California was \$8.4 million. Reflecting the impact of the financial crisis and recession, this is a significantly lower level of investment relative to 2006, when the estimated total investment in new course construction was \$163.6 million (or \$179.6 million in 2011 dollars when adjusted for inflation).

### C. GOLF-RELATED SUPPLIES

This section explains SRI’s methodology for calculating California manufacturers’ exports (out-of-state and overseas shipments) of golf apparel, golf equipment, and accessories. We also detail our methodology for calculating the retail margin for on-course and off-course purchases of golf equipment, golf apparel, and golf media.

**Manufacturing Exports.** The economic value created by golf-related supplies consists of two components: (1) design, testing and value-added production and (2) retail sales margin. On the manufacturing side, we are concerned with the value-added production of golf equipment, golf apparel, and golf accessories. This is the value of the company’s wholesale revenues minus the cost of production inputs, and this value-added production is attributable to the state in which the golf club or golf ball is manufactured.

We began by conducting database research to identify manufacturers of golf-related products in the state. We identified a few companies that design, manufacture and/or assemble golf shafts, custom

clubs and golf accessories in California: Acushnet, Callaway Golf, Cleveland Golf/Srixon, TaylorMade-adidas Golf, Yamaha Golf Car, etc. We estimated the value added of these companies' out-of-state shipments of golf merchandise in 2011.

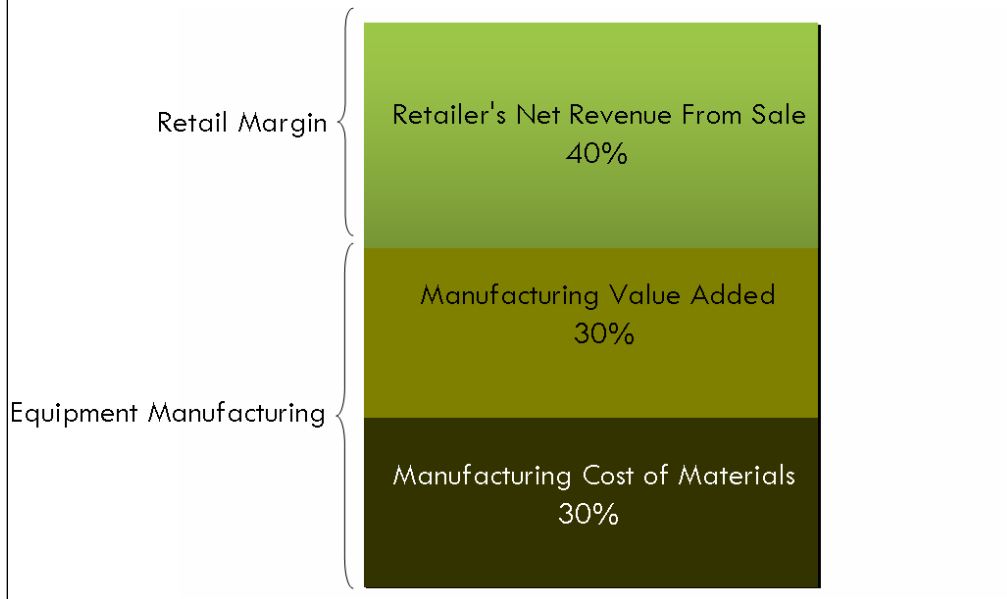
California Manufacturers' Value-Added Exports of Golf-Related Products in 2011 (\$ millions)	
<b>TOTAL</b>	<b>\$787.7</b>

**Retail Margin.** On the retail side, the economic value is derived from the margin the retailer makes from the sale of the golf club, i.e., the net revenues accruing to retailers after covering the cost of purchasing the golf equipment or apparel from the wholesaler/producer.

To calculate this margin, we first estimate total sales of golf apparel and equipment at the state level and then apply the requisite retail margin percentage for economic impact analysis. In our national level study for GOLF 20/20, SRI was able to collect national sales data from a number of sources: (1) the NGF, (2) the National Sporting Goods Association (NSGA), (3) Golf Datatech, and (4) the Census Bureau. Unfortunately, the relatively small sample size for the majority of these surveys do not allow for publication of reliable state-level estimates by these organizations. However, each year the NSGA conducts a 100,000-household consumer panel survey for its annual *The Sporting Goods Market* publication. SRI uses these data in conjunction with the PGA's golf facilities data for each state to derive state-level estimates of golf equipment and apparel sales.

For example, in 2011, NSGA reported total U.S. off-course and on-course purchases of individual golf clubs to be \$603.3 million. The NSGA survey found the Pacific region accounted for 13.4% of these purchases, or \$80.8 million. Within the Pacific region, one can estimate California's share of purchases by creating a rounds- or courses-based weight. Using either approach yields similar weights, since the number of rounds played is highly correlated with the number of 18-hole equivalent courses in a state ( $r=0.93$ ). SRI used the number of 18-hole equivalent courses in each state, as it was easier to verify than estimated number of rounds played. California represents 63.8% of total 18-hole equivalent courses in the Pacific region, so this weight was applied to the region total (\$80.8 million) to estimate \$51.6 million of individual golf club sales in the state of California in 2011. Further, retail margins on final sales suggest that 40.1%, or \$20.7 million, of total sales was retained in the California economy. (See graphic below.)

**Distribution of Economic Value of \$1 of Golf Equipment Sales**



California's On-Course and Off-Course Golf Equipment & Apparel Purchases, 2011		
Category	Calculation	Estimate (\$ millions)
Golf club sets	Pacific region's sales	\$187.4
	CA's courses-based weight	63.8%
	<b>CA's share of sales [1]</b>	<b>\$119.6</b>
Golf apparel	Pacific region's sales	\$115.5
	CA's courses-based weight	63.8%
	<b>CA's share of sales, [2]</b>	<b>\$73.7</b>
Golf balls	Pacific region's sales	\$78.6
	CA's courses-based weight	63.8%
	<b>CA's share of sales, [3]</b>	<b>\$50.1</b>
Golf clubs	Pacific region's sales	\$80.8
	CA's courses-based weight	63.8%
	<b>CA's share of sales, [4]</b>	<b>\$51.6</b>
Golf bags	Pacific region's sales	\$31.4
	CA's courses-based weight	63.8%
	<b>CA's share of sales, [5]</b>	<b>\$20.0</b>
Golf shoes	Pacific region's sales	\$28.5
	CA's courses-based weight	63.8%
	<b>CA's share of sales, [6]</b>	<b>\$18.2</b>
TOTAL	Sum of [1] to [6]	<b>\$339.3</b>
<b>Retail sales margin</b>	<b>Multiply TOTAL by 40.1%</b>	<b>\$136.1</b>

Source: National Sporting Goods Association (2012). *The Sporting Goods Market in 2012*, Mt. Prospect, IL: NSGA.

**Golf media.** Similar to golf equipment, golf media's economic contribution to the state economy has two components: value-added production and the retail sales margin. On the production side, the economic impact created by the publication of magazines or books is attributable to the state in which the magazine or book is published. For golf magazines, we identified national golf publications with the largest circulations. *Golf Tips Magazine* is published by Werner Publishing Corporation in Los Angeles, *Golf Inc.* magazine is published by Cypress Magazines Inc. in San Diego, and *Executive Golfer* magazine is published by Pazdur Publishing, Inc. in Irvine. Since magazine publishing is classified as part of the manufacturing sector, SRI included these magazines' value-added revenues from out-of-state sales included in the manufacturing segment.

On the retail side, the economic impact is derived from the margin the retailer makes from the sale of golf media, i.e., the net revenues accruing to retailers after covering the cost of purchasing the media from the wholesalers/producers. We calculated a weight to estimate the percentage of book retailers' sales attributable to the sale of golf books in stores. Total retail golf book sales in 2011 were estimated to be \$6,116,000 with a retail sales margin of \$2,452,000. Golf videos and DVDs are more difficult. In SRI's previous national-level study, we were not able to identify a source with data on the annual sales of golf-specific videos/DVDs. In the case of this current state-level study, this category was also omitted due to the absence of a reliable data source.

<b>On-Course and Off-Course Sales of Golf Books in California, 2011</b>	
<b>Category</b>	<b>Estimate</b>
California retail book sales <sup>1</sup>	\$1,456,095,005
Golf books as % of total book sales	0.4%
Total retail golf book sales	\$6,115,599
Retail sales margin	\$2,452,355

Note: <sup>1</sup>Adjusted for inflation into 2011 dollars using the appropriate GDP deflator.  
Sources: California retail book sales data from the *2007 Economic Census*. Estimated percentage of golf books among total book sales derived from the *2006 Bowker Annual of Library & Book Trade Information* and American Booksellers Association data.

<b>California Retailers' Net Revenues on Consumer Purchases of Golf-Related Supplies in 2010 (\$ millions)</b>		
	<b>Total purchases</b>	<b>Retail sales margin</b>
Golf Equipment (retail margin)	\$259.5	\$104.1
Golf Apparel (retail margin)	\$73.7	\$29.6
Golf Media (retail margin)	\$6.1	\$2.5
<b>TOTAL</b>	<b>\$339.3</b>	<b>\$136.1</b>

Note: This includes on-course and off-course purchases of golf equipment, apparel and media. Column does not sum due to rounding.

#### **D. STATE GOLF ASSOCIATIONS, TOURNAMENTS & CHARITABLE EVENTS**

**Associations.** SRI gathered association revenue data for the largest national, state and regional golf organizations from these organizations' 990 income tax filings. These include the Northern California and the Southern California Golf Associations, the Northern California and Southern California Sections of the PGA, multiple chapters of the state's Golf Course Superintendents Association, the Golden State

Chapter of the Club Managers Association of America, and the California Golf Course Owners Association. Also included are the expenditures of a number of golf foundations, as well as women’s, senior, junior, and regional member golf associations.

**Major Tournaments.** In 2011, 12 major golf championships were played in California: five PGA TOUR events, three Champions Tour events, two Nationwide Tour (now Web.com Tour) events, and two LPGA Tour events. We subtracted the tournament purse and cost of television broadcasting from total tournament revenues to estimate the direct event-related spending that remained in the state. Accommodation and tourism-related expenditures from this event are captured in the Tourism segment of the report.

California’s Major Golf Tournament & State Golf Association Revenues in 2011 (\$ millions)	
Major Tournaments	\$112.0
Associations	\$69.5
<b>TOTAL<sup>1</sup></b>	<b>\$181.5</b>

**Charitable Events.** Overall, SRI estimates that the amount of charitable giving attributed to the game of golf in California to be \$364.6 million in 2011. This estimate is derived from a national study<sup>39</sup> based on the number of golf facilities that hold charitable golf events, the average number of events held by each facility, and the average net proceeds donated to charities from these events. It also includes the charitable giving associated with professional golf tournaments. Charitable giving is not included in economic impact estimation because it is a direct transfer of income. Nevertheless, it is an important golf industry contribution to the state.

Charitable Giving by California Golf Industry in 2011 (\$ millions)	
<b>TOTAL</b>	<b>\$364.6</b>

**E. REAL ESTATE**

In analyzing golf-related residential real estate, SRI collected data on two components: (1) new golf-related residential construction and (2) the “golf” premium associated with the sale of golf community homes.

<sup>39</sup> National Golf Foundation (2012). *The Charitable Impact Report*.

California's Golf Real Estate Revenues in 2011 (\$ millions)	
<b>Golf-Related Residential Construction</b>	<b>\$269.0</b>
<b>Realized Golf Premium</b>	<b>\$103.5</b>
<b>TOTAL</b>	<b>\$372.5</b>

Note: The sale of existing homes is considered a transfer of assets rather than new economic output, so the golf premium that is realized in the sale of an existing home is not included in the economic impact analysis.

**Golf-related residential construction.** For this industry segment, SRI conducted research and interviews with golf real estate developers to arrive at estimates of the number of courses with active real estate development, the size of the development, the number of homes under construction in a given year, and the average construction costs per type of home (i.e., townhouse, condo or single family home). The number of courses with active development was derived from new course openings over the past five years and online research. Construction values varied considerably depending on such factors as the location of golf communities within the state, the proportion of townhouses versus single family homes and overall real estate market conditions (e.g., high-growth metro regions versus more rural parts of the state).

SRI estimates that approximately a dozen golf communities were under development, to varying degrees, in California in 2011. Developments ranged from the 1,700-unit Ashwood Golf Course development in Apple Valley to the 96-home Western Hills Country Club in Chino Hills. In 2011, only a handful of homes were built at most of these developments due to the overall economic and housing market situation. However, a larger number of homes (ranging from 17 to over 100) were constructed at a third of these developments. The new homes built in 2011 had an average construction cost of \$2.2 million. Multiplying the total number of units under construction at each course by their average construction cost and summing these values yielded a total 2011 golf-related residential construction figure of \$269 million.

**Realized golf premium.** The "golf" premium is the extra value a homeowner can expect to receive on the sale of a housing unit located in a golf community that is above and beyond the premium associated with a home's other features or amenities (e.g., square footage, fixtures, landscaping, etc.). In 2006, SRI arrived at a premium estimate of \$60,000 per unit through industry interviews. In 2011, SRI used a much more conservative estimate of \$25,000 per unit given the significant decline in overall residential sales prices in California. Multiplying California's 242 golf communities by the average number of housing units per golf course (500), we arrived at a total of 121,000 golf community homes. In 2011, the home turnover rate (percentage of homes sold relative to the total housing stock) was 3.4 percent in California. SRI calculated the realized golf premium by multiplying the home turnover rate by the total number of golf community homes and the average golf premium per unit. SRI estimates California's golf real estate

premium was \$103.5 million in 2011, down from \$340.2 million reflecting fewer golf home sales and a lower golf premium.

## F. HOSPITALITY/TOURISM

Although a large and critical golf industry segment, there are no national sources of state-level golf tourism data. SRI calculates a state's total golf tourism revenues by collecting data for two types of figures: (1) the annual number of golf-related stays and (2) average spending per stay.

**Number of golf-related stays.** A number of organizations conduct surveys monitoring changes in trip volume and traveler preferences. Some of these surveys include golf participation questions, such as the Travel Industry Association (TIA) of America's TravelScope® surveys, now conducted by D.K. Shifflet & Associates (DKSA) and marketed as *DIRECTIONS® Travel Intelligence System<sup>SM</sup>*. To maintain consistency with golf tourism estimates calculated for other states, SRI used the DKSA estimates for total California domestic visitor trips: 208.6 million person-trips in 2011.<sup>40</sup> In 2011, Visit California began reporting the state's tourism statistics in terms of person-trips, not person-stays, which it had used in the years prior.<sup>41</sup> To maintain consistency with the methodology applied by SRI to estimate golf-related tourism spending in 2006, which had employed person-stays, SRI estimated the number of corresponding person-stays in 2011 to be 367.5 million in California.<sup>42</sup> This represents an increase of 4.3 percent in total person-stays relative to 2006, which was 352.3 million.<sup>43</sup> SRI then applied this increase to the golf day and overnight person-stays calculated in 2006, which were 1,557,000 and 1,437,000 in California, respectively, to arrive at 1,624,000 golf day stays and 1,499,000 golf overnight stays in 2011. Therefore, SRI estimates total golf stays in 2011 to be 3,124,000 as compared to 2,995,000 in 2006.

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<sup>40</sup> D.K. Shifflet & Associates, Ltd. (DKSA) TNS TravelsAmerica (2011). *2011 Domestic Travel to California*, courtesy of Visit California. <http://industry.visitcalifornia.com/Research/California-Statistics-and-Trends/>.

<sup>41</sup> According to D.K. Shifflet & Associates, a "person-trip" is the number of unique people who are on a trip, which is counted from the time a travel party leaves their home until they return, even if there are multiple stops along the way. If the travel party consists of 2 people then the trip would consist of 2 person-trips. This metric tells you how many total travel parties (not necessarily unique) stayed in your destination. A "person-stay" is the number of unique people who are on a stay; a stay is counted for each unique destination on a trip. A trip from Boston, MA to Durham, NC that included stops in New York, NY and Philadelphia, PA would be counted as 3 stays: 1 for each destination city (New York, Philadelphia, and Durham). If there were 2 people on this trip, this would equate to 2 person-stays per destination, or a total of 6 person-stays.

<sup>42</sup> SRI employed a conversion ratio of 1.761 person-stays for every 1 person-trip, based on the total person-stays and person-trips reported in California in 2009, 322.03 million and 182.78 million, respectively. Source: D.K. Shifflet & Associates, Ltd. DKSA GLOBAL DIRECTIONS® (2010). *California: 2009 Data Tables Public Version*. Prepared for the California Travel and Tourism Commission. <http://industry.visitcalifornia.com/Research/California-Statistics-and-Trends/>.

<sup>43</sup> D.K. Shifflet & Associates, Ltd. DKSA DESTINATION PERFORMANCE/Monitor<sup>SM</sup> (2007). *California Domestic Travel Report, 2006 – PUBLIC VERSION*. Courtesy of Visit California. <http://industry.visitcalifornia.com/Research/California-Statistics-and-Trends/>.



SRI defines a “golf stay” as a California resident or non-resident traveling 50-plus miles to, through, or within the state to a unique destination and playing golf while at this destination. Golf-related stays include both overnight and day stays. This figure includes trips to California golf resort destinations (of which California has 90), golf outings while on vacation or business travel, as well as trips by California residents to play golf courses in other parts of the state. People also travel to watch the golf pros and upcoming golf talent battle it out at the professional and amateur golf tournaments played in California.<sup>44</sup>

**Average spending per golf stay.** SRI estimated that average spending per golf stay in California in 2011 was \$87 per day stay and \$825 per overnight stay. This includes spending on accommodation, local transportation, food and beverage, entertainment, gifts and so on. Greens fees and cart fees are not included as they are already captured in the Golf Facility Operations revenues. To estimate average golf trip expenditure, we began with national golf trip survey data from the National Golf Foundation’s *The U.S. Golf Travel Market, 2003 Edition* report<sup>45</sup> and adjusted average trip spending based upon online research of California golf packages and relative price levels in California vis-à-vis the rest of the country. Multiplying the total number of golf trips (day and overnight) by average spending per golf trip (day and overnight), SRI found that total golf-related tourism spending in California was \$1.379 billion in 2011. This represents a slight increase in real terms relative to golf-related tourism spending in 2006, which was \$1.245 billion (or \$1.367 billion in 2011 dollars, when adjusted for inflation); this increase is consistent with the marginal real growth experienced overall in total tourism spending in California, which grew from \$92.4 billion in 2006 (or \$101.44 billion in 2011 dollars, when adjusted for inflation) to \$102.3 billion in 2011, as the economy recovered from the recession of 2007-09.<sup>46</sup>

<b>California’s Golf-Related Travel Expenditures in 2011</b>	
# Golf day person-stays	1,624,000
Average travel \$ per person per day stay	\$87.51
# Golf overnight person-stays	1,499,000
Average travel \$ per person per overnight stay	\$825.02
<b>Total</b>	<b>\$1.379 billion</b>

<sup>44</sup> In 2011, 12 major golf championships were played in California, including 5 PGA TOUR events, 3 Champions Tour events, 2 Nationwide Tour events, and 2 LPGA Tour events. These tournaments attract thousands of spectators from across the state, country, and internationally. For example, the Toshiba Classic typically attracts over 80,000 spectators to Newport Beach annually. Refer to:

<http://www.visitnewportbeach.com/articles/index.cfm?action=view&articleID=16&menuID=153>

<sup>45</sup> See “Average Travel Spending” table on p.16 in NGF (2003), *U.S. Golf Travel Market*, available at: <http://www.ngf.org/cgi/catalogsearchdetail.asp?ITEMNUMBER=99MR002>. SRI adjusted for inflation from 2002-2011, since 2002 is NGF’s most recent on golf travel survey.

<sup>46</sup> Dean Runyan Associates (2012). *California Travel Impacts by County, 1992-2010; 2011 Preliminary State & Regional Estimates*. Prepared for the California Travel and Tourism Commission. <http://industry.visitcalifornia.com/Research/California-Statistics-and-Trends/>.

## G. GOLF’S ECONOMIC IMPACT

The impact of golf on a state’s economy includes both the direct impact of the sector itself (its core and enabled industries), as well as the indirect and induced (or multiplier) impacts that are supported by golf industry employment and expenditures.

**Direct economic impact.** The direct economic impact of golf is simply the size of the golf industry cluster within the state economy in terms of revenues. The “state golf economy” can be calculated by adding together the size of each of the core and enabled industries calculated in the sections above:

Direct Impact of the State Golf Economy	
+	Golf Facility Operations
+	Golf Course Capital Investment
+	Golf-Related Supplies
+	Media, Tournaments, Associations
+	Real Estate
+	Hospitality/Tourism
=	Size of State Golf Economy

**Indirect/induced economic impact (multiplier impact).** Golf course facilities and the companies that provide goods and services to the golf industry, in turn, purchase goods and services from other companies. These purchases are considered the “indirect” impacts of the golf sector. Furthermore, the employees directly employed by the golf sector will spend much of their incomes in the region, creating more spending and more jobs in the economy. These impacts are considered “induced” impacts. Together, the indirect and induced impacts make up the multiplier impact of the golf economy.

Multiplier values vary from region to region, based on the unique characteristics of the state’s or region’s economy. Industries with more extensive linkages to other industries within the local economy will have a greater multiplier effect on final economic activity relative to the initial, direct effect. Conversely, economies and industry sectors dependent on a large share of imported supply will have smaller multiplier effects. For this study, the RIMS II (Regional Input-Output Multipliers), calculated by the U.S. Bureau of Economic Analysis, were used to calculate the multiplier impact of California’s golf economy.

<b>Golf's Impact on California's Economy (2011)</b>						
<b>INDUSTRY</b>	<b>DIRECT (\$ millions)</b>	<b>INDIRECT</b>	<b>INDUCED</b>	<b>TOTAL OUTPUT (\$ millions)</b>	<b>TOTAL JOBS</b>	<b>TOTAL WAGE INCOME (\$ millions)</b>
Golf Facility Operations	\$3,343.3	→		\$7,119.6	80,149	\$2,251.7
Golf Course Capital Investment*	\$144.5	→		\$19.5	137	\$6,494.2
Golf-Related Supplies	\$923.8	→		\$1,890.3	12,043	\$525.3
Tournaments & Associations	\$181.5	→		\$447.5	3,956	\$156.6
Real Estate **	\$372.5	→		\$628.9	4,405	\$209.0
Hospitality/Tourism	\$1,379.3	→		\$3,026.0	27,650	\$911.2
<b>TOTAL</b>	<b>\$6,344.8</b>	<b>→</b>		<b>\$13,131.9</b>	<b>128,340</b>	<b>\$4,060.4</b>

Note: Columns may not sum due to rounding. To calculate golf's total economic impact, SRI subtracted from the direct golf economy impact of \$6.345 billion the portion of capital investment that is investment in existing facilities (\$136.1 million of \$144.5 million) and the portion of real estate that is the realized golf premium associated with the sale of real estate in existing developments (\$103.5 million of \$372.5 million). This is because:

\*Golf course capital investments—Only new course construction has an indirect and induced economic impact. Other types of facility capital investment are typically financed through facility revenues and, therefore, are omitted to avoid double-counting.

\*\*Real Estate—Only golf residential construction has an indirect and induced impact. The golf premium associated with golf real estate is considered a transfer of assets rather than new economic activity.

Numbers in columns may not sum due to rounding.

## BIBLIOGRAPHY

Audubon International (2012). Audubon Cooperative Sanctuary Program for Golf: Certification Criteria and California Certified Courses. Retrieved December 5, 2012: <http://auduboninternational.org/acsp-golf-certified?&tab=1>.

*Bowker Annual of Library & Book Trade Information 2006, 50th Edition* (2006). New York, NY: R.R. Bowker.

California Department of Water Resources (2005). *Agricultural Water Use Collection Program Data*. Retrieved December 3, 2012. Sacramento, CA: California Department of Water Resources.

California Department of Water Resources (2010). *20 x 2020 Water Conservation Plan*. Sacramento, CA: California Department of Water Resources.

California Department of Water Resources (2011). *Agricultural Water Use Model Description*. Sacramento, CA: California Department of Water Resources.

California Environmental Protection Agency (2009). *Municipal Wastewater Recycling Survey*. Sacramento, CA: CEPA State Water Resources Control Board.  
[http://www.waterboards.ca.gov/water\\_issues/programs/grants\\_loans/water\\_recycling/munirec.shtml](http://www.waterboards.ca.gov/water_issues/programs/grants_loans/water_recycling/munirec.shtml).

Center for Irrigation Technology (2011). *Agricultural Water Use in California: A 2011 Update*. California State University Fresno, CA: Center for Irrigation Technology.

County of Los Angeles Department of Parks and Recreation (2009). "A Conversation on the Successful Use of Recycled Water and Drought Tolerant Plants in Park Settings." Proceedings of the 2009 Conservation Forum, Los Angeles, CA.

D.K. Shifflet & Associates, Ltd. (DKSA) TNS TravelsAmerica (2011). *2011 Domestic Travel to California*, courtesy of Visit California. <http://industry.visitcalifornia.com/Research/California-Statistics-and-Trends/>.

D.K. Shifflet & Associates, Ltd. DKSA DESTINATION PERFORMANCE/MonitorSM (2007). *California Domestic Travel Report, 2006 – PUBLIC VERSION*. Courtesy of Visit California.  
<http://industry.visitcalifornia.com/Research/California-Statistics-and-Trends/>.

Dean Runyan Associates (2012). *California Travel Impacts by County, 1992-2010; 2011 Preliminary State & Regional Estimates*. Prepared for the California Travel and Tourism Commission.  
<http://industry.visitcalifornia.com/Research/California-Statistics-and-Trends/>.

Golf Course Builders Association of America (2010). *Guide to Estimating Cost for Golf Course Construction*. Lincoln, NE: Golf Course Builders Association of America.

Golf Course Superintendents Association of America (2005). Compensation Survey. Lawrence, KS: Golf Course Superintendents Association of America.

Golf Course Superintendents Association of America (2007). Compensation Survey. Lawrence, KS: Golf Course Superintendents Association of America.

Golf Course Superintendents Association of America (2009). Compensation Survey. Lawrence, KS: Golf Course Superintendents Association of America.

Golf Course Superintendents Association of America (2011). Compensation Survey. Lawrence, KS: Golf Course Superintendents Association of America.

Golf Course Superintendents Association of America, Environmental Institute for Golf (2007). *Golf Course Environmental Profile: Volume I, Property Profile and Environmental Stewardship of Golf Courses*. Lawrence, KS: Golf Course Superintendents Association of America.

Golf Course Superintendents Association of America, Environmental Institute for Golf (2009). *Golf Course Environmental Profile: Volume II, Water Use and Conservation Practices on U.S. Golf Courses*. Lawrence, KS: Golf Course Superintendents Association of America.

Golf Course Superintendents Association of America, Environmental Institute for Golf (2009). *Golf Course Environmental Profile: Volume III, Nutrient Use and Management on U.S. Golf Courses*. Lawrence, KS: Golf Course Superintendents Association of America.

Golf Datatech (2006). On-Course Sales Data by Equipment Category. Kissimmee, FL: Golf Datatech.

Lyman, G.T. (2007). "Golf Course Land Use, Water Use, and Conservation." Presentation at the Irrigation Association Conference, San Diego, CA.

Melisi, C., Running, S.W., Elvidge, C.D., Dietx, J.B., Tuttle, B.T., Nemani, R.R. (2005). "Mapping and Modeling the Biochemical Cycling of Turf Grasses in the United States." *Environmental Management*, Vol. 36(3), pages 426-438.

Metropolitan Water District of Southern California (2012). *A Progress Report to the California State Legislature: Achievements in Conservation, Recycling and Ground Water Recharge*. Los Angeles, CA: Metropolitan Water District of Southern California.

National Association of Realtors (2011). *Existing Home Sales Series*. Chicago, IL: National Association of Realtors. <http://www.realtor.org/Research.nsf/Pages/EHSdata>

National Golf Course Owners Association (2008). *Troubled Waters: Golf's Future in a Thirsty World*. Charleston, SC: National Golf Course Owners Association.

National Golf Foundation (2012). *The Charitable Impact Report*. Jupiter, FL: National Golf Foundation.

NGF (2003). *Golf Business Almanac*. Jupiter, FL: National Golf Foundation.

NGF (2003). *U.S. Golf Travel Market*. Jupiter, FL: National Golf Foundation.

NGF (2006). *Golf Industry Overview*. Jupiter, FL: National Golf Foundation.

NGF (2006). *Golf Industry Report*. Jupiter, FL: National Golf Foundation.

NGF (2011). *Operating & Financial Performance Profiles of 18-hole Facilities in the U.S., 2009 edition*, Jupiter, FL: National Golf Foundation.

NGF (2012). *Golf Facilities in the U.S.* Jupiter, FL: The National Golf Foundation.

National Sporting Goods Association (2010). *Sports Clothing Expenditures in 2009*. Mt. Prospect, IL: National Sporting Goods Association.

National Sporting Goods Association (2012). *The Sporting Goods Market in 2011*. Mt. Prospect, IL: National Sporting Goods Association.

The PGA of America (2006). *Compensation Study*. Palm Beach Gardens, FL: The PGA of America.

The PGA of America (2009). *Golf Facility Database*. Palm Beach Gardens, FL: The PGA of America.

The PGA of America (2007). *Operations Survey*. Palm Beach Gardens, FL: The PGA of America.

The PGA of America (2008). *Operations Survey*. Palm Beach Gardens, FL: The PGA of America.

The PGA of America (2009). *Operations Survey*. Palm Beach Gardens, FL: The PGA of America.

The PGA of America (2010). *Operations Survey*. Palm Beach Gardens, FL: The PGA of America.

The PGA of America (2011). *Operations Survey*. Palm Beach Gardens, FL: The PGA of America.

The PGA of America (2012). Operations Survey. Palm Beach Gardens, FL: The PGA of America.

SRI International (2002). *The Golf Economy Report*. Arlington, VA: SRI International.

SRI International (2006). *The Virginia Golf Economy 2005*. Arlington, VA: SRI International.

SRI International (2008). *The California Golf Economy 2006*. Arlington, VA: SRI International.

Templeton, S.R., Henry, M.S. Bihui, J., Zilberman, D. (2002). *Economic Impacts of California's Golf Course Facilities in 2000*. Research Report RR-02-01, Department of Agricultural and Applied Economics, Clemson University and Department of Agricultural and Resource Economics, University of California, Berkeley.

Templeton, S.R., Zilberman, D., Henry, M.S. (2010). "Golf Courses in California as Modern Agricultural Enterprises." *Agricultural and Resource Economics Update*, Vol. 13(3). Gianini Foundation of Agricultural Economics, Berkeley CA: University of California.

Throssell, C.S., Lyman, G.T., Johnson, M.E., and Brown, C.D. (2009). "Golf Course Environmental Profile Measures Water Use, Source, Cost, Quality, and Management and Conservation Strategies." Online. *Applied Turfgrass Science*, doi:10.1094/ATS-2009-0129-01-RS.

UCLA Institute of the Environment and Sustainability (2009). *Graywater: A Potential Source of Water*. Retrieved December 6, 2012: <http://www.environment.ucla.edu/reportcard/article.asp?parentid=4870>.

U.S. Census Bureau (2010). *2007 Economic Census: Arts, Entertainment and Recreation Industry Series*. Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration.

U.S. Census Bureau (2010). *California: 2007. 2007 Economic Census: Arts, Entertainment and Recreation Geographic Area Series*. Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration.

U.S. Census Bureau (2011). *Annual Survey of Manufacturers: 2010 Statistics for All Manufacturing by State*. Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration. <http://www.census.gov/manufacturing/asm/index.html>

U.S. Census Bureau (2010). Table 1: Annual Estimates of Housing Units for the United States and States: April 1, 2000 to July 1, 2009 (HU-EST2005-01). Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration.

U.S. Department of Agriculture, Economic Research Service (2010). "Top Commodities, Exports, and Counties," *California State Fact Sheet*. <http://www.ers.usda.gov/statefacts/CA.HTM>.

U.S. Department of Agriculture, National Agricultural Statistics Service (2012). *California Agricultural Statistics, Crop Year 2011*. Sacramento, CA: USDA California Field Office.

U.S. Department of the Interior, National Park Service (2011). *Economic Benefits to Local Communities from National Park Visitation and Payroll, 2010*. Washington, DC: U.S. Department of the Interior, National Park Service.

United States Geological Survey, USGS (2012). *Estimated Use of Water in the U.S. in 2005*. Retrieved December 6, 2012: <http://water.usgs.gov/watuse>.

Williams, B.R. (2012). *An L.A. Story. Golf Course Industry*. Retrieved December 11, 2012: <http://www.golfcourseindustry.com/gci0712-golf-courses-water-needs.aspx>.