



2015

# Texas Cancer Plan Evaluation Report



September 2015





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We are pleased and proud to share the very first *Texas Cancer Plan Evaluation Report* with you, as produced by members of the Cancer Alliance of Texas.

The mission of the Cancer Alliance of Texas (CAT) is to engage organizations, agencies, institutions and individuals to work collaboratively to reduce the impact of cancer in Texas and promote the *Texas Cancer Plan*. The Alliance now includes more than 75 members and partners representing major cancer control stakeholders in the state, focusing on the goals of the *Texas Cancer Plan*: primary prevention and risk reduction; screening and early detection; diagnosis, treatment and palliation; quality of life and survivorship, infrastructure, research, and disparities and priority populations. (TCP link available at <http://pendadesign.com/cat/wp-content/uploads/2014/11/texas-cancer-plan2012.pdf>)

This historic document represents the first time in nearly 20 years that a formal report has been developed to provide an update on the progress being made and continuing challenges we face in the ongoing fight against this disease.

We extend a special thanks to Co-Chairs of our *Texas Cancer Plan* Workgroup, Deborah Vollmer Dahlke, DrPH, and Barbara Pence, PhD; to members of the Workgroup; to our colleagues at the Texas Department of State Health Services; and many others who contributed to this progress report.

We hope that this report, like the *Texas Cancer Plan*, serves as a useful tool to help us all as we work toward reducing the impact of cancer on Texas in our lifetime. The challenges have never been greater. The need for CAT and other cancer stakeholders to collaborate to prevent cancer, increase screening and detection, improve outcomes, and increase quality of life is critical. We hope you will use his report and help us with our efforts.

Sincerely,

A handwritten signature in cursive script, appearing to read "Karen Torges".

Karen Torges  
Chair  
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## CANCER ALLIANCE OF TEXAS

### OUR MISSION

*The mission of the Cancer Alliance of Texas (CAT) is to engage organizations, agencies, institutions and individuals to work collaboratively to reduce the impact of cancer in Texas and promote the [Texas Cancer Plan](#).*

*The aim of CAT is to advance cooperative efforts that focus on the goals of the [Texas Cancer Plan](#): Primary Prevention and Risk Reduction, Screening and Early Detection, Diagnosis, Treatment and Palliation, Quality of Life and Survivorship, Infrastructure, and Research and Commercialization.*

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## EXECUTIVE SUMMARY OF THE INTERIM EVALUATION

### Background

In April of 2012, the Cancer Prevention and Research Institute of Texas (CPRIT) published the fifth *Texas Cancer Plan: A Statewide Call to Action for Cancer Research, Prevention, and Control* (the “*Plan*”). The *Plan* was developed in accordance with CPRIT’s statutory charge to ensure that Texas maintains its comprehensive, timely and historic approach to cancer control. As with the previous plans, CAT provided significant input into the *Plan*. Seven CAT members, each representing their individual groups, out of a total of fifteen stakeholders from across Texas participated in the *Texas Cancer Plan* Revision Work Group.

CPRIT has the statutory responsibility for developing and disseminating our state’s Cancer Plan, which identifies the challenges and issues that affect Texas, and presents a comprehensive set of goals, objectives and strategic actions to control cancer in our state. For the first time, this plan takes statewide cancer control a step further by creating a clear call to action for providers, policy makers, cancer advocates, patients, researchers and the business community to reduce the burden of cancer and cancer disparities in Texas. While CPRIT is charged with the responsibility of facilitating the development of the *Plan*, the outcomes and success in achieving the goals and objectives of the *Plan* rests in the actions, cooperation and collaboration of multiple stakeholders across the state, including, but not limited to, CPRIT, the Texas Department of State Health Services, the Cancer Alliance of Texas (CAT), the NCI - designated Cancer Centers and community cancer clinics across the state, the cancer researchers, both public and private sector and the communities, businesses and most importantly the healthcare providers patients and advocacy groups across the state of Texas.

### Purpose of the Interim Evaluation

The purpose of this interim evaluation and assessment of the *Plan* in 2015, three years after its initial publication, is to set in place the metrics and processes for evaluation of the progress of cancer control against the framework set in place by the *Plan*. This interim evaluation sets the stage for the assessments and planning that needs to occur in preparation for the full evaluation that will occur prior to the development of the next, sixth *Plan*. As of yet, no formal evaluation of any of the Texas *Plans* has occurred. This interim evaluation will provide a basis for identifying and assessing progress against the multiple goals and also help identify new areas for possible inclusion as goals, objectives or strategic actions for the next *Plan*.

The Principles upon which the 2012 *Plan* was developed and this interim evaluation assesses include: 1) focus on the continuum of cancer research prevention and control; 2) the definition of measurable and realistic targets based upon the review of available (at the time of publication) based line and trend data, such as those provided by the Texas Cancer Registry and the Texas Behavioral Risk Factor Surveillance System (BRFSS); 3) Alignment with national priorities, including those developed by Healthy People 2020; 4) including evidence-based guidelines, such as those recommended by the Guide to Community Preventative Services, Cancer Control P.L. A.

N.E.T., and the U.S. Preventive Services Task Force; and 5) most importantly, identifying and collecting data on methods and data that address cancer health disparities and priority populations in Texas.

The following sections provide a summary of each of the goals of the *Plan*. Where data is available based on the Principles stated above it is reported and compared to the measures, baseline and 2016 target provided in the 2012 *Plan*. Due to a change in data collection by the BRFSS that now includes cell phones in surveys, some of the longitudinal data reported in 2015 cannot be directly compared to the measures available in 2010. Measures for the BRFSS goals are reported, but should not be against those earlier than 2011. Note that several of the metrics stated in the 2012 *Plan* are based on 2010 and earlier data. If data were available for 2011, these were substituted for the 2010 baseline data, so that valid comparisons could be made not only for the interim evaluation, but also going forward in future years.

In this document, the CAT *Texas Cancer Plan* Evaluation Priority Workgroup provides analyses of what the change or “delta” is for measures stated in the 2012 *Plan* and the measure as of 2015 in percentage change. Percentage change (or percent change) measures the difference in value using percentages. Percentage change is how changes in magnitude are shown for leading health indicators in the U.S. government’s Healthy People 2020 reports and analyses. It provides a means of demonstrating the impact of programs or policies by conveying the magnitude of the change. It also shows the difference between the before values versus the after values. Percentage change can be a positive or negative value. In this evaluation we calculate percentage change as follows: Simply subtract the baseline “before” value from the “after” value; divide by the baseline, and multiply the result by 100. Add a % sign, and this is the percentage change as presented.

## **Goal 1: Reduce incidence and mortality from lung cancer and other tobacco-related cancers.**

### **Objectives:**

- 1.1 Decrease the percentage of youth who report smoking cigarettes or using smokeless tobacco on one or more of the previous 30 days
  
- 1.2 Decrease the percentage of adults who report smoking cigarettes or using smokeless tobacco on one or more of the previous 30 days
  
- 1.3 Reduce exposure to secondhand smoke

### **Strategic Actions**

- Implement policy, systems, and environmental change and other evidence-based strategies that decrease tobacco use and initiation and exposure to secondhand smoke.  
*Evidence-based strategies may include:*
  - Promoting and implementing tobacco-free environment policies statewide.
  - Conducting youth- and adult-focused counter-marketing campaigns statewide.  
Increasing prices of cigarettes and other tobacco products.
  - Expanding access to and promoting use of comprehensive tobacco cessation programs and services.
- Advocate for and dedicate consistent and reliable funding for tobacco control at the level recommended by the CDC.
- Improve health professional knowledge, practice behaviors, and system support related to increasing provision of or referral to tobacco cessation services.
- Conduct statewide messaging campaigns about the dangers of secondhand smoke.
- Promote the adoption of CEO Gold Standard™ for worksites.
- Implement evidence-based strategies to decrease disparities in gender, racial/ethnic populations, and rural communities related to incidence and mortality from tobacco-related cancers.

**Figure 1A. Tobacco Use Among Youth**

Measure	Baseline/ Source	Metric/ Source	2016 Target	Change Up/Down
% of High School students who report smoking cigarettes on one or more of the previous 30 days	17.4% (YRBSS 2011)	14.3% (YRBSS 2013)	13.0%	18% decrease
% Of high school students who report using smokeless tobacco on one or more of the previous 30 days	6.2% (YRBSS, 2011)	8.1% (YRBSS 2013)	5.0%	31% increase

The Youth Risk Behavior Surveillance Survey (YRBSS) indicates mixed results on the state’s progress toward discouraging youth tobacco use. The percent of high school students who reported smoking cigarettes decreased from 17% to 14.3%. This is below the *Healthy People 2020* goal of 16%. The youth smoking rate is making progress toward Texas’ 2016 target of 13.0%.

On the other hand, while use of smokeless tobacco among Texas high school students is lower than the smoking rate, there was a 31% increase from 6.2% to 8.1%. Since the rate of smokeless tobacco use is moving in the wrong direction, concern about meeting the 2016 target rate, 5%, is warranted in spite of the decrease in the youth smoking rate.

**Figure 1B. Tobacco Use in Adults**

Measure	Baseline/ Source	Metric/ Source	2016 Target	Change Up/Down
% Of adults who have smoked 100 cigarettes in their lifetime and now smoke every day or some days	19.2% (BRFSS, 2011)	15.9% (BRFSS, 2013)	13.0%	17% decrease
% Of adults who report using smokeless tobacco on one or more of the previous 30 days	1.9% (BRFSS, 2011)	4.3% (BRFSS, 2013)	2.0%	126% increase

There has been a decrease in the percent of adults who report smoking cigarettes, to 15.9% between 2011 and 2013. However, adult use of smokeless tobacco reported on the BRFSS increased very significantly from 1.9% to 4.3%. The 2013 rate for adult use of smokeless tobacco is alarming. Reaching the 2016 target for adult smoking calls for a 32% rate of change from the 2012 to 2016 data sets and we are more than halfway to that goal. The apparent switch from smoking to use of smokeless tobacco now demands more attention.

**Figure 1C. Texans Covered by Smoke-Free Legislation**

<b>Measure</b>	<b>Baseline/ Source</b>	<b>Metric/ Source</b>	<b>2016 Target</b>	<b>Change Up/Down</b>
# of Texas cities and % of Texans covered by comprehensive Smoke-Free Workplace Ordinances	45% of Texans living in incorporated areas and none of those living in unincorporated areas are covered (33.4% of all Texans)  (Smokefreetexas.org 2011 and Texas Data Center)	36.0% of all Texans are covered by 100% smoke free restaurant and bar laws  ( <a href="http://www.no-smoke.org/pdf/RBpercentMap.pdf">http://www.no-smoke.org/pdf/RBpercentMap.pdf</a> , 07/23/2015)	100% Texans covered by comprehensive smoke-free law	Comparability of the methodologies is unknown 9% increase
Age-adjusted mortality rate, lung cancer	46.1 per 100,000 (TX Cancer Registry, 2008)	40.8 per 100,000 (TX Cancer Registry, 2012)	34 per 100,000	11.5% decrease

While clean air policy goals were not in the original 2012 *Texas Cancer Plan*, we include data from all current measures that refer to this goal in the BRFSS surveys. Smoke-Free Texas, a coalition organized around increasing support for clean air policies and enforcement, reported, in 2011, 45% of Texans living in incorporated areas were protected from second-hand smoke by city ordinances (8.8 million persons). In 2011, the Texas population was 25 million, and local ordinances protected 33.4% of all Texans (8.8 million/25 million) from second-hand smoke in public spaces. Statewide law is the only mechanism for protecting the 5.5 million Texans living in unincorporated areas. The campaign for local ordinance continues in the absence of state law. Nosmoke.org reports that as of July 23, 2015, smoke-free restaurant and bar laws currently protect 36.0% of Texans. Although the change in the percent of Texans protected by local ordinances appears to be moving in the right direction, statewide law is the only way the target of 100% of Texans covered will be met. Over 20% of Texans will never be protected by local ordinances, as these do not occur in unincorporated areas.

**Goal 2: Reduce cancer risk related to obesity.**

**Objectives:**

- 2.1 Increase the percentage of youth who are at a healthy weight
- 2.2 Increase the percentage of adults who are at a healthy weight

Alert: The percentage of adults and high school students having a healthy weight continues to decline. To reduce cancer risk related to obesity, more Texans must achieve and maintain a healthy weight.

Source: BRFSS, 2010

**Strategic Actions**

- Implement policy, systems and environmental change, and other evidence-based strategies that reduce the risk of cancer related to obesity. *Evidence-based strategies may include:*
  - Implementing evidence-based school and youth community programs that promote healthy weight.
  - Implementing evidence-based worksite and adult community programs that promote healthy weight.
  - Conducting adult-awareness campaigns statewide on the links between obesity, diabetes, and risk of cancer.
  - Promoting built environment and policy approaches designed to provide opportunities for people to be more physically active and have easy access to healthy foods.
- Advocate for and dedicate consistent and reliable funding for implementation of evidence-based obesity prevention and control programs and policies.
- Improve health professional knowledge, practice behaviors, and system support related to increasing provision of or referral to counseling and services that promote obesity reduction and control.
- Encourage breastfeeding.
- Promote the adoption of CEO Gold Standard™ for worksites.

**Figure 2A. Youth and Healthy Weight**

Measure	Baseline/ Source	Metric/ Source	2016 Target	Change Up/Down
% of high school students who are at a healthy weight	68.5% (YRBSS, 2011)	68.7% (YRBSS, 2013)	75%	0.3% increase

**Figure 2B. Adults and Healthy Weight**

<b>Measure</b>	<b>Baseline/ Source</b>	<b>Metric/ Source</b>	<b>2016 Target</b>	<b>Change Up/Down</b>
% of adults who are a healthy weight	34.2% * (BRFSS, 2011)	33.9% (BRFSS, 2013)*	36%	0.9 % decrease *

\* The Plan used 30.9% from 2010 BRFSS which would not allow calculation of a percentage change.

These data do not support any significant movement in the direction of improvement in Texas' obesity rates. For youth, there is only a 0.3% increase in those who are at a healthy weight, and for adults, there is a slight 0.9% decrease in % of adults who are at a healthy weight. According to [americanhealthrankings.org](http://americanhealthrankings.org), in the past year, obesity in Texas adults increased 6 percent, from 29.2% in 2013, to 30.9% as reported in BRFSS 2014 data. When reviewing obesity rates by education level, the rates range from 40.4%, in those with less than a high school education, down to 23.3%, for those with a college degree. A strategy for targeting those groups with the highest rates of obesity may have greater impact on obesity rates than using broad-based messages aimed at the public in general. The adult obesity rate for the US as a whole was 29.4% (BRFSS 2014), up from 2012 when it 27.8% (BFRSS 2012).

### **Goal 3: Increase adoption of evidence-based nutrition behaviors and physical activity behaviors shown to reduce cancer risk.**

#### **Objectives:**

3.1 Increase the percentage of youth who follow evidence-based physical activity guidelines<sup>1</sup>

3.2 Increase the percentage of adults who follow evidence-based physical activity guidelines<sup>2</sup>

3.3 Increase the percentage of youth and adults who follow evidence-based nutrition guidelines (5 fruits/veggies/day)<sup>3</sup>

#### **Strategic Actions**

- Implement policy, systems, and environmental change and other evidence-based strategies that increase the adoption of nutrition and physical activity behaviors. *Evidence-based strategies may include:*
  - Implementing evidence-based school and youth community programs that promote good nutrition and physical activity.
  - Implementing evidence-based worksite and adult community programs that promote good nutrition and physical activity.
  - Conducting adult-awareness campaigns statewide on the links between nutrition and physical activity and risk of cancer.
  - Promoting built environment and policy approaches designed to provide opportunities for people to be more physically active and have easy access to healthy foods.
- Advocate for and dedicate consistent and reliable funding for implementation of evidence-based nutrition and physical activity recommendations shown to reduce cancer risk.
- Improve health professional knowledge, practice behaviors, and system support related to increasing provision of or referral to counseling and services that promote nutrition and physical activity guidelines.
- Promote the adoption of CEO Gold Standard™ for worksites.
- Promote alcohol consumption of no more than 2 drinks per day for men and one drink per day for women (ACS).

Sources for national guidelines:

1. Physical Activity Guidelines for Americans, 2008
2. Physical Activity Guidelines for Americans, 2008
3. Dietary Guidelines for Americans, 2010

**Figure 3A. Nutrition and Physical Activity**

Measures	Baseline/ Source	Metric/ Source	Target	Change Up/down
% of high school students who were physically active for a total of at least 60 minutes per day on five or more of the past seven days	44.5% (YRBSS, 2011)	48.3% (YRBSS, 2013)	54%	8.5% increase
% of adults who were physically active for a total of 150 minutes per week	48.2% (BRFSS, 2011)	42.1 (BRFSS, 2013)	75%	12.7% decrease
% of high school students who ate fruits and vegetables 5 or more times per day	18.5% (YRBSS, 2011)	22.5% (YRBSS, 2013)	26%	21.6% increase
% of adults who ate fruits and vegetables 5 or more times per day	18.1% (BRFSS, 2011)	14.3% (BRFSS, 2013)	30%	21% decrease

For youth, between 2011 and 2014, there was an increase in both the reported % meeting physical activities guidelines (8.5% change) and nutrition guidelines (26% change), although neither has yet met the 2016 target. Data for adults show a decrease in both physical activity and consumption of fruits and vegetables. The measures have changed somewhat from the 2012 *Texas Cancer Plan* and the stated delta or change reflects the change in BFRSS questions.

## **Goal 4: Increase vaccination rates for vaccines shown to reduce the risk of cancer.**

### **Objectives:**

- 4.1 Increase the percentage of youth and young adults who have completed the recommended HPV vaccine series according to national guidelines
  
- 4.2 Promote Hepatitis B vaccine and adoption of CDC recommendations for hepatitis screening

### **Strategic Actions**

- Implement policy, systems, and environmental change and other evidence-based strategies that address infectious disease causes related to cancer. *Evidence-based strategies may include:*
  - Conducting a statewide awareness campaign on the link between infectious diseases and cancer risk.
  - Advocating to make *Immtrac*, the state immunization registry, an opt-out program, and to use *Immtrac* for adults.
  - Implementing evidence-based programs that promote immunization of high risk adults against Hepatitis B and teens and pre-teens of both sexes against HPV.
  - Promote demonstration projects and research on screening for liver cancer
  
- Improve health professional knowledge, practice behaviors, and system support related to increasing provision of or referral to immunizations against HPV and Hepatitis B.

**Figure 4A. Vaccination Rates**

<b>Measures</b>	<b>Baseline/ Source</b>	<b>Metric/ Source</b>	<b>2016 Target</b>	<b>Percent Change</b>
% of adolescents ages 13-17 who completed 3 doses of HPV *	<i>Plan</i> baseline 27% Corrected metric * 23.4%	33.9% (2014 National Immunization Survey-Teen)	50%	45% increase
% of female adolescents, aged 13–17 years, who completed 3 doses of the HPV vaccine	23.4 (2009 National Immunization Survey-Teen)	33.9% (2014 National Immunization Survey-Teen)	50%	45% increase
% of male adolescents ages 13-17 who completed 3 doses of the HPV vaccine		17.7 % (2014 National Immunization Survey-Teen)	50%	
HBV vaccination* (no measure specified – see note below)				

\* Since HPV was not widely prescribed for males in 2009, we assume this to be the % for females. Note that there is a correction to the original metric in the *Plan*.

There has been a 45% increase in the percentage of female adolescents who received the recommended HPV vaccine. The increase has not yet met the 2016 target. With respect to the promotion of HPV screening in Texas, MD Anderson Cancer Center convened a Summit on HPV-related Diseases in June 2015. The purpose of the summit was to review and discuss evidence-based practices for prevention and treatment.

## Goal 5: Reduce skin cancer risk resulting from solar and artificial ultraviolet radiation.

### Objectives:

- 5.1 Promote skin cancer prevention behavior among youth, adolescents, and adults
- 5.2 Reduce the incidence and mortality from melanoma

### Strategic Actions

- Implement policy, systems, and environmental change and other evidence-based strategies that increase the adoption of ultraviolet radiation safety behaviors. *Evidence-based strategies may include:*
  - Advocating for eliminating the use of tanning beds.
  - Implementing evidence-based school, worksite, and community programs that promote sun safety.
  - Conducting statewide awareness campaigns on the link between solar radiation and risk of skin cancer (settings such as parks, schools, daycare centers, worksites, and beaches).
- Conducting statewide awareness campaigns on recognizing the early signs and symptoms of skin cancer.

**Figure 5A. Melanomas of the Skin**

Measure	Baseline/Source	Metric Source	2016 Target	% Change
Age - Adjusted incidence rate- Total per 100,000	14.0 TCR* 2009	12.1 TCR 2012	Not Stated	13.6% Decrease
Age - Adjusted mortality rate per 100,000	2.5 TCR 2008	2.2 TCR 2012		12.0% Decrease

\* Correction from Plan provided by Texas Cancer Registry (TCR)

Both the incidence and mortality rates for melanoma of the skin decreased slightly for both Texas total and white non-Hispanic populations from the baseline 2008 year to the 2011-12, the most recent years data were reported.

Tanning beds have been categorized by the U.S. Department of Health and Human Services as carcinogenic and are heavily used by young adults, particularly college students. In 2013, the Texas Legislature banned minors from using commercial tanning facilities, which may affect the number of skin cancer cases in the future. However, there have been few, if any prevention grant

opportunities to educate these 1.5 million college students in Texas about melanoma and other skin cancers. The 2012 *Texas Cancer Plan* suggests students should learn about skin cancer in their health courses, but most college students do not take health courses, nor do university general education health courses underscore skin cancer prevention. No entity, in fact, currently exists to undertake this urgent statewide strategy that will potentially decrease the incidence and mortality of preventable cancer (e.g. skin, lung, liver, cervical, breast, testicular). The 1.5 million college students should be a major vehicle in closing this serious gap, especially because the students can also be deployed as "multiplier effects" into their local university communities, hometowns, and families to share information about preventing cancer.

## Goal 6: Reduce the risk of cancer related to environmental carcinogens

### Objectives:

6.1 Promote evidence-based policies, systems, and environmental changes that reduce exposure for workers and communities to known environmental carcinogens

6.2 Promote research related to environmental carcinogens

### Strategic Actions

- Implement evidence-based policies, programs, and system changes to increase transparency and information sharing among the public, researchers, regulatory agencies, and industry about environmental carcinogens.
- Advocate for and dedicate consistent and reliable funding for evidence-based epidemiologic and environmental monitoring and research across the life course (*in utero* and childhood, workplace, and multi-generational exposures).
- Advocate for system changes and training programs to prevent community and workplace exposure to carcinogens.
- Improve health professional knowledge, practice behaviors, and systems support related to known and emerging environmental carcinogens.

### Environmental Exposures and Outcomes

Although the full extent of environmental influences on cancer has yet to be determined, there is a growing body of evidence that links environmental exposures to cancer. <sup>1</sup>

According to the 2014 report by Environment America Research and Policy Center<sup>2</sup>, Texas was the second worst state in the nation in 2012 for toxic releases into waterways, with almost 16.5 million pounds of toxic materials released. And, Texas was the worst in the nation when measuring the toxicity of the releases into waterways from a wide variety of chemicals. Some of these toxic industrial materials are carcinogenic. Specifically, the Lower Brazos River in Texas received the largest amount of carcinogenic industrial toxic materials, more than 21,000 pounds, and South Corpus Christi Bay received 16,500 pounds of toxic carcinogens. Under the current federal Toxic Release Inventory (TRI) law, the burgeoning oil and gas “fracking” operations are not required to report their toxic releases into water bodies.

The American Lung Association’s 2014 State of the Air<sup>3</sup> report ranks Houston 6<sup>th</sup> and Dallas-Ft. Worth 8<sup>th</sup> in the listing of the most ozone-polluted cities in the nation, and El Paso ranks 8<sup>th</sup> in year-round particle air pollution. Texas has the largest number of coal-burning power plants in the nation, with 491 plants emitting a total of more than 78,000 pounds of toxic mercury annually.

In 2013, the U.S. Environmental Protection Agency<sup>4</sup> (EPA) reported that 1,718 Texas facilities released a variety Toxic Release Inventory (TRI) chemicals totaling 223,811,000 pounds: on-site 62,581,000 pounds into the air, 15,419,000 into the water, and 122,275,000 into the land; and off-site 23,536,000 pounds. The release of 27,227,000 pounds of acrylonitrile, a known

carcinogen, comprised 22.27% of land releases in Texas. Finally, the EPA data show on-site toxic releases in Texas rose from 150 million pounds in 2009, to 200 million pounds in 2013; almost all of the 50 million pounds of the increase was attributed to toxic materials released into the land.

Sources:

1) NCI, 2008–2009 Annual Report, President’s Cancer Panel

2 (Wasting Our Waterways

[http://environmentamericacenter.org/sites/environment/files/reports/US\\_wastingwaterways\\_scrn%20061814\\_0.pdf](http://environmentamericacenter.org/sites/environment/files/reports/US_wastingwaterways_scrn%20061814_0.pdf)

3) <http://www.stateoftheair.org/2014/city-rankings/>

4) <http://www2.epa.gov/toxics-release-inventory-tri-program>.

## **Goal 7: Increase the proportion of early stage diagnosis through screening and early detection to reduce deaths from breast cancer.**

### **Objectives:**

7.1 Increase proportion of women who receive breast cancer screening according to national guidelines.

7.2 Reduce the rate of late-stage diagnosis of breast cancer.

An alert was published in the 2012 *Texas Cancer Plan* for this goal, pointing to a decrease in the percent of Texas women screened for breast cancer. More eligible women must get screened according to current recommendations, in order to increase the early detection of breast cancer, when treatment is more likely to be successful.

### **Strategic Actions**

- Increase and improve access to care by reducing structural and financial barriers.  
*Evidence-based strategies may include:*
  - Increasing hours of operation.
  - Increasing access to transportation services. – Increasing mobile and other alternative screening opportunities.
  - Increasing access to insurance coverage.
  - Promoting investments in and increasing availability of patient navigation services.
  - Using best practice models for increasing collaboration among service providers to ensure continuum of care (access to treatment).
  - Ensuring appropriate follow-up for those who receive abnormal breast-cancer screening results.
- Using evidence-based interventions, provide education on breast cancer and promote screening guidelines and awareness of insurance coverage options, including all underserved populations.
- Promote the provision of screening services through medical homes, accountable-care organizations, and other emerging models of healthcare delivery.
- Increase availability and utilization of electronic medical records and implementation of clinical system changes to increase utilization of evidence-based cancer screening.
- Improve health professional knowledge, practice behaviors, and system support related to improving service delivery.
- Implement evidence-based interventions related to diagnosis, treatment, and palliation to decrease disparities in racial/ethnic populations, populations with less education, underserved adolescents and young adults, and underserved geographic areas of the state.

**Figure 7A. Breast Cancer**

<b>Measure</b>	<b>Baseline/Source</b>	<b>Metric/Source</b>	<b>2016 Target</b>	<b>% Change</b>
% of women over age 40 and over who have had a mammogram within the past 2 years	70.1% (BRFSS, 2010)	64.8% (BRFSS, 2012)	80%	No change calculated due to changes in BRFSS data capture
Rate per 100,000 female breast cancer diagnosis	41.6 per 100,000 (TCR, 2008)	38.1 per 100,000 (TCR 2011)	35 per 100,000	8.4% decrease
Age-adjusted mortality rate female breast cancer	21.8 per 100,000 (TCR, 2008)	21.0 per 100,000 (TCR, 2012)	18 per 100,000	3.7% decrease

## **Goal 8: Reduce deaths and number of new cases of cervical cancer screening and early detection.**

### **Objectives:**

8.1 Increase proportion of women who receive cervical cancer screening according to national guidelines\*

8.2 Reduce rate of invasive cervical cancer

\* Sources for national guidelines: CDC, USPSTF, and ACS

An alert was published in the 2012 *Texas Cancer Plan* for this goal because of a decline in the percentage of women getting screened for cervical cancer. More eligible women must get screened, according to current recommendations. In addition, the HPV vaccine has been proven to prevent most cervical cancers and its uptake must be significantly increased in order to eradicate cervical cancer in Texas.

### **Strategic Actions**

- Increase and improve access to care by reducing structural and financial barriers. *Evidence-based strategies may include:*
  - Increasing hours of operation.
  - Increasing access to transportation services.
  - Increasing alternative screening opportunities.
  - Increasing access to insurance coverage.
  - Promoting investments in and increasing availability of patient navigation services. – Using best practice models for increasing collaboration among service providers to ensure continuum of care (access to treatment).
  - Ensuring appropriate follow-up for women who receive abnormal cervical-cancer screening results.
- Using evidence-based interventions, provide education on cervical cancer and promote screening guidelines and awareness of insurance coverage options, including all underserved populations.
- Promote the provision of screening services through medical homes, accountable-care organizations, and other emerging models of healthcare delivery.
- Increase availability and utilization of electronic medical records and implementation of clinical system changes to increase utilization of evidence-based cancer screening.
- Improve health professional knowledge, practice behaviors, and system support related to improving service delivery.
- Implement evidence-based interventions related to diagnosis, treatment, and palliation to decrease disparities in racial/ethnic populations, populations with less education, underserved adolescents and young adults, and underserved geographic areas of the state.

**Figure 8A. Cervical Cancer**

<b>Measure</b>	<b>Baseline/Source</b>	<b>Metric/Source</b>	<b>2016 Target</b>	<b>% Change</b>
% of women age 18+ who have had a Pap test w/in the past 3 yrs.	76.4% (BRFSS, 2010)	74.6% BRFSS 2012	85%	No % change calculated due to BRFSS change in data collection
Rate per 100,000 cervical cancer diagnoses at invasive stage (local, regional and distant)	9.3* per 100,000 TCR, 2008	9.0 per 100,000 TCR, 2011	7 per 100,000	3.2% decrease
Age-adjusted mortality rate cervical cancer	2.9* per 100,000 TCR, 2008	2.8 per 100,000 TCR, 2011	2 per 100,000	3.4% decrease

\*Corrected from Plan by Texas Cancer Registry (TCR)

## **Goal 9: Reduce the number of deaths and new cases of colon and rectum cancer through screening and early detection.**

### **Objectives:**

9.1 Increase proportion of adults who receive colon and rectum cancer screening according to national guidelines.

9.2 Reduce the rate of invasive colon and rectum cancer.

### **Strategic Actions**

- Expand capacity for colon and rectum cancer screening and follow-up.
- Increase and improve access to care by reducing structural and financial barriers.
  - Evidence-based strategies may include:*
    - Increasing hours of operation.
    - Increasing access to transportation services.
    - Increasing alternative screening opportunities.
    - Increasing access to insurance coverage.
    - Promoting investments in and increasing availability of patient navigation services.
    - Using best-practice models for increasing collaboration among service providers to ensure continuum of care (access to treatment).
    - Ensuring appropriate follow-up for men and women who receive abnormal colon and rectum screening results.
    - Increasing trained workforce who can perform colon cancer screenings.
- Using evidence-based interventions, provide education on colon and rectum cancer and promote screening guidelines and awareness of insurance coverage options, including all underserved populations.
- Promote the provision of screening services through medical homes, accountable-care organizations, and other emerging models of healthcare delivery.
- Increase availability and utilization of electronic medical records and implementation of clinical system changes to increase utilization of evidence-based cancer screening.
- Improve health professional knowledge, practice behaviors, and systems support related to improving service delivery.
- Develop, evaluate, and promote new technologies that will increase public demand and utilization of screening.
- Implement evidence-based interventions related to diagnosis, treatment, and palliation to decrease disparities in racial/ethnic populations, populations with less education, underserved adolescents and young adults, and underserved geographic areas of the state.

**Figure 9A. Colon and Rectal Cancer**

<b>Measure</b>	<b>Baseline/Sources</b>	<b>Metric/Source</b>	<b>2016 Target</b>	<b>% Change</b>
% of adults age 50+ who have had a sigmoidoscopy or colonoscopy	53.3% (BRFSS 2010)	62.6% BRFSS (2012)	75%	Data cannot be compared due to change in BRFSS data collection
Rate per 100,000 colon and rectum cancer diagnoses at invasive stage	37.4% per 100,000 (TCR, 2008)	38.0 per 100,000 (TCR, 2012)	27 per 100,000	1.6% increase
Age-adjusted mortality rate colon and rectum cancer	15.8 per 100,000 (TCR, 2008)	14.6 per 100,000 TCR 2011	12 per 100,000	7.6% decrease

## **Goal 10: Develop and implement screening and early detection methods for other cancers.**

### **Objectives:**

10.1 Promote education about prostate cancer, including screening.

10.2 Develop and implement more effective screening and early detection methods that can differentiate between aggressive and indolent cancers for which there is no benefit from treatment.

10.3 Develop and implement novel methods for screening and early detection, including imaging technologies, genomics, and proteomics.

### **Strategic actions**

- Provide education on prostate cancer and prostate cancer screening, including the known risks and possible benefits.
- Increase awareness of and implementation of new evidence-based screening and early detection methods into routine practice.
- Promote demonstration projects and continued study of emerging screening technologies.
- Promote evaluation of emerging screening methodologies that have an evidence base

### **Notes on Screening and Technologies**

It is currently suggested by the US Preventive Services Task Force Guidelines for prostate cancer screening to be limited to those with an increased risk profile rather than continuing population-based PSA screening based on age. The American Urological Association now recommends that men under 55 with average risk should not be screened. For men ages 55-69, there should be shared decision making between doctor and patient to determine when to screen, and this screening should only occur every two years rather than annually. Routine screening is not recommended for men over 70.

In terms of other cancers, there are new recommendations for lung cancer screening for smokers and those who have quit. The USPSTF recommends screening annually for lung cancer with low-dose computed tomography in asymptomatic adults aged 55-80 years who have a 30-pack-year smoking history and currently smoke or have quit smoking within the past 15 years. Screening should be discontinued when the patient has not smoked for 15 years. This method has high sensitivity and acceptable specificity for detecting lung cancer in high-risk persons and is the only currently recommended screening test for lung cancer. However, uptake of this new screening recommendation is still low and more physician, as well as patient, education is needed to increase screening to the more than 8.7 million people who are at risk in the US, Texas included.

No specific metrics were developed for this *Texas Cancer Plan* goal.

## **Goal 11: Increase timely access to quality cancer diagnostic, treatment, and palliation services for all Texans.**

### **Objectives:**

- 11.1 Promote awareness, education and advocacy efforts aimed at increasing the number of patients who receive high quality care.
- 11.2 Promote timely access to and utilization of care for individuals who are underinsured or uninsured, or do not qualify for financial assistance programs.
- 11.3 Promote timely and appropriate referral to hospice care and informed decision-making.
- 11.4 Promote appropriate pain and symptom management among cancer survivors.

An alert accompanied this *Texas Cancer Plan* goal stating that, as of 2009, only 42% of Texas hospitals with at least 50 beds report offering some type of palliative care program; which is staggeringly lower than the national average of 63%.

### **Strategic Actions**

- Actively promote adoption of quality standards of care according to national guidelines (Commission on Cancer, NCCN, etc.)
- Encourage hospitals/facilities to pursue advanced certification for palliative care.
- Develop, implement, and evaluate public and health professional education and advocacy plans to support adoption and practice of existing standards of quality care for all patients.
- Increase standardized training for and utilization of patient navigators and community health workers in both clinic and community settings across the continuum of cancer care.
- Develop, implement, and evaluate education and advocacy plans to support an increase in the number of hospitals and treatment facilities with Commission on Cancer accreditation in underserved areas of Texas.
- Gather data and report on patient/survivor experiences with diagnosis, treatment, and post-treatment care plans.
- Implement evidence-based policy and systems change to increase and improve delivery of care and reduce structural and financial barriers.
- Implement evidence-based interventions related to diagnosis, treatment, and palliation to decrease disparities in racial/ethnic populations, populations with less education, underserved adolescents and young adults, and underserved geographic areas of the state.

**Figure 11A. Palliation**

<b>Measure</b>	<b>Baseline/Sources</b>	<b>Metric/Source</b>	<b>2016 Target</b>	<b>% Change</b>
Palliative Care Grade of C	Grade of C on a scale of A-F <sup>1</sup>	None	Grade of A	None
Pain Scorecard *	Grade of C on a scale of A-F <sup>2</sup>	Grade of C+ 2013	Grade of A	Increase

1.data from Center to Advance Palliative Care, 2011

2.data from Pain and Policy Studies group, 2008

## **Goal 12: Promote overall health and well-being of people affected by cancer.**

### **Objectives:**

12.1 Promote availability of and access to culturally relevant survivorship programs and services designed to improve quality of life.

12.2 Promote availability of and access to evidence-based or recommended survivorship services in order to maximize survival.

12.3 Promote providing cancer survivors with a written summary of treatment and care plan.

### **Strategic Actions**

- Promote delivery of essential elements in core survivorship programs and services by participating in ongoing state and national activities.
- Assess compliance with survivorship policies, programs, and activities relative to the recommendations from the IOM.
- Promote use of standards for delivery of survivor services developed by national organizations (NHPCO, CAPC, ACoS, etc.).
- Develop and evaluate curricula based on the IOM recommendations that target health-profession students, community health workers, and health professionals.
- Train health-profession students, community health workers, and health professionals using established curricula.
- Encourage the incorporation of survivorship curricula that include cultural competency and communication skills into professional education and training programs.
- Develop and enhance patient-centered navigation systems and pathways based on best practices to ensure optimum care across the continuum of cancer survivorship.
- Promote collaboration among organizations to identify and implement evidence-based programs with appropriate adaptations for the needs of the population served.
- Advocate for policies and funding for implementation of evidence based survivorship programs shown to improve quality of life.
- Increase knowledge of survivorship issues for the general public, cancer survivors, health care professionals, and policy makers.
- Promote availability of caregiver support services.

### **Notes on the Current Status of Cancer Survivorship Standards**

In 2012, the American College of Surgeons Commission on Cancer (ACoS CoC) issued three cancer patient-centered standards that had to be instituted by January 1, 2015 for accreditation of cancer programs. These standards included: 3.1 Patient Navigation Process, 3.2 Psychosocial Distress Screening, and 3.3 Survivorship Care Plan (SCP). However, they had to revisit their requirements because many of their 1500 member cancer centers and hospitals across the country have been having trouble complying with requirement 3.3. In the summer

of 2013, the CoC surveyed 1,390 of its member programs on their readiness to implement the three Continuum of Care Standards. This survey revealed that only 37 percent of CoC programs thought they would be able to meet Standard 3.3 by 2015, and only 21% indicated that they had developed a survivorship care plan process. However, the CoC accredited cancer programs in the US represent only 30 percent of all institutions treating cancer patients, but represent more than 70 percent of all new cancer patients diagnosed annually. The status in the other 70 percent of cancer treatment centers with regard to survivorship care plans is unknown. Additionally, survivorship care plan use in US cancer programs ranges from 14 to 53%. Non-academic and non-National Comprehensive Cancer Network member programs reported 38% vs. 89% usage for care plans in affiliated programs (Birken et al, J Can Educ, 2014). Freestanding cancer programs did not report current SCP use (0% vs. 48%, Birken et al, J Can Educ 2014).

Thus, there is a significant dilemma as to what data should be used as the metric for survivor care in the evaluation of the *Texas Cancer Plan*. It is therefore proposed to use the 2015 baseline of 10% in CoC cancer centers as that is the goal set for a pilot implementation of SCP processes in CoC-accredited centers. Likewise, the target goal for January 2016 is to provide SCPs to 25% of eligible patients. This does not address implementation in non-CoC accredited cancer centers. Additionally, the metric will need to be redefined as SCP use per eligible patient, which is inclusive of both written treatment summary and written follow-up care instructions.

**Figure 12A. Cancer Survivorship Care Plans**

Measure	Baseline/Sources	Metric/Source	2016 Target
% of cancer survivors ages 18+ who received a written summary of their cancer treatments and written instruction for follow up	0-10% (ACoS COC Survey – 2015)  Possible future baseline in BRFSS	Not available	25% (ACoS CoC survey Planned for 2016)

These metrics are changed from those in the 2012 *Texas Cancer Plan*, in that, the ACoS CoC has combined the two BRFSS measures into one, such that a cancer survivor must receive both a written summary of their cancer treatments and also written instructions for cancer follow-up. The two separate questions were to be asked beginning in the 2012 BRFSS. Data from BRFSS 2010 reported 33.7% received a written summary of treatments and 42.8% received written instruction for cancer follow-up. It is not known if these or other questions will be added to future BRFSS surveys at this time.

## **Goal 13: Develop or strengthen the infrastructure supporting the delivery of the most appropriate cancer prevention and care services.**

### **Objectives:**

13.1 Increase the number and distribution of quality, accessible, and affordable facilities, equipment, technology and cancer prevention and care services

13.2 Increase the number of well-trained health professionals serving rural and other health professional shortage areas

13.3 Enhance and protect existing cancer data systems, including the Texas Cancer Registry, BRFSS, YBRSS to monitor and support outcome-driven cancer research, prevention and control.

The *Plan* included an alert for Goal 13: Texas has the highest percentage of uninsured population of any state, estimated at 27%. Source: US Census Bureau, 2010.

### **Strategic Actions**

- Advocate for and dedicate consistent and reliable funding to strengthen the infrastructure supporting the collection of quality cancer data and delivery of quality cancer prevention and care.
- Build leadership and partnerships in underserved communities to provide and promote systems and social policy changes supporting cancer prevention activities.
- Identify and promote awareness of existing facilities and resources and fully implement evidence-based strategies and interventions to build and sustain healthy communities.
- Increase the number of accredited facilities (ACoS, the Joint Commission, AAAHC, etc.) in areas of need.
- Increase the number of NCI-designated cancer centers in the state.
- Promote collaborations that facilitate transition of young adult and childhood cancer survivors to adult health care systems.
- Develop and adopt disaster preparedness plans for cancer patients.
- Increase data collection and enhanced data elements for electronic health records and health information exchanges.
- Promote careers in health care with specialized focus on cancer from high school through graduate education.
- Address projected shortages in cancer workforce geographically and by specialty.
- Advocate for adoption of state and federal policies to maintain an adequate supply of standard cancer treatment drugs.
- Improve health professional knowledge, practice behaviors, and systems support related to improving cultural competency and implementing policy and systems change that increases provision of or referral to services.

- Develop and strengthen communication channels to facilitate translation of research into practice.
- Advocate for appropriate payment for prevention services and the continuum of cancer care services.
- Maintain NAACCR Gold Standard Certification for the TCR.
- Enhance awareness and promote use of cancer data for research, prevention, and control. • Monitor *Texas Cancer Plan* goals and objectives.
- Build capacity to expand and provide BRFSS measures annually and provide actionable local level data for both BRFSS and YRBSS.

**Figure 13A. Texas’ Uninsured Population, Health Professional Shortage and Medically Underserved Areas**

Measure	Baseline/Source	Metric/Source	2016 Target	% Change
% Of population uninsured	27% (U.S. Census 2010)	22.1% (U.S. Census, 2013)	Unstated	18.0 % Decrease*
Number of counties with health professional shortage areas	216/254 Counties Kaiser Family Foundation 2011	299 HPSAs <sup>1</sup>	Unstated	
Number of Medically Underserved Areas- Whole and partial counties	Whole county 179 Partial county 44 (TX DSHS)			

\*Additional data from Rice University Baker Institute in March 2015 listed a decrease to 16.9% uninsured, probably largely due to the Affordable Care Act.

\*\*These were the total number of designated Health Professional Shortage Areas (HPSAs) as determined 7/24/2015 by accessing the HRSA Data Warehouse (<http://datawarehouse.hrsa.gov>) This data is limited to primary care and does not delineate by county or part of a country as did previous data in the 2012 *Texas Cancer Plan*.

## **Goal 14: Support the highest quality and most innovative research that will enhance the potential for medical or scientific breakthroughs in cancer.**

### **Objectives**

14.1 Enhance and expand the research capabilities and collaboration of public or private institutions of higher education with other private and public entities that will promote a substantial increase in both quality and quantity of cancer research

14.2 Emphasize rapid and open dissemination and translation of research to practice and the community.

### **Strategic Actions**

- Promote funding opportunities across the spectrum of cancer research:
  - Prevention
  - Early detection
  - Basic
  - Clinical and translational
  - Dissemination
  - Community-based participatory research
  - Public Health Systems and Services Research (PHSSR).
- Utilize a conflict-of-interest-free review process that selects exemplary research projects with the highest potential for impact.
- Encourage funding of projects with a level of risk that is commensurate with their potential impact.
- Recruit highly qualified researchers at different career stages with goals of increasing the quality, diversity, geographic distribution, and size of the workforce.
- Promote development of infrastructure that supports high quality research in geographically underserved areas of the state.
- Include the voice of the advocate/survivor in the clinical and community health research process.
- Engage the advocacy community in advocating for funding to support research across the continuum.
- Promote research training and diversity of trainees at all levels.

The *Texas Cancer Plan* did not provide any metrics or target milestones for this goal. However, the actions of CPRIT have positioned the state to achieve groundbreaking research in cancer prevention and treatment and have vastly expanded the research capabilities and infrastructure of the state.

Examples drawn from the *CPRIT 2014 Achievement Report* include the following:

- Since inception in 2010, CPRIT funding has attracted over 90 cancer researchers and their labs to Texas and led to more than 3,000 published findings across the cancer continuum including prevention, early detection, basic cancer research, survivorship, clinical and translational, dissemination, community based-participatory research.
- Research funded by CPRIT has resulted in 84 new clinical trials opened for accrual in Texas as of February 2015 with 5,593 patients participating.
- CPRIT funding has supported delivery of 2 million preventative cancer services in all 254 Texas Counties.
- CPRIT has funded over \$865 Million in follow-on investment to support the development of new and existing companies engaged in cancer treatment product development.

In addition to CPRIT, in the time period between the 2012 *Plan* publication and the publication of this interim report, other providers in Texas including the Texas Department of State Health Services, Komen, and a large number of other organizations have delivered funded cancer prevention services including mammograms, cervical cancer and HPV screenings and colon cancer screening between 2012 and 2015.

With ten medical schools and a growing number of early and clinical stage companies developing cancer medications, imaging technology and medical devices, Texas researchers excel in applying for NIH grants, including SBIRs and STTRS. In 2012, Texas researchers received 993 cancer related grants from Federal sources (NIH, CDC, FDA) in the amount of \$421,285,159. As of 2014, Texas researchers had received 962 grants totaling \$394,598,332.

Source: NIH RePORTER.

**Goal 15: Increase opportunities to access and participate in cancer research and clinical trials.**

**Objectives:**

15.1 Increase awareness, participation, and retention of eligible patients, including those from diverse and under-represented populations in cancer clinical trials.

**Strategic Actions**

- Expand geographic (community) reach of clinical trials to provide patients and physicians with local access to novel therapeutics and cancer treatments.
- Develop, implement, and evaluate education and advocacy plans to increase public and professional awareness, knowledge, and adoption of clinical trials, focusing on the use of tissue donation opportunities and the challenges of personalized medicine.
- Increase infrastructure resources necessary to implement childhood cancer clinical trials.
- Develop, implement, and evaluate education and advocacy plans to increase infrastructure resources for clinical trials, focusing on:
  - Systems and technologies to support personalized medicine
  - Use of electronic health records and health information exchanges – Maintaining a user friendly database of current clinical trials
- Encourage researchers applying for federal, state, or other funds to incorporate meaningful community participation in their research design and throughout the clinical trial process.
- Build community education and community capacity for understanding and supporting clinical research, including the dissemination of results to community members.

**Figure 15A. Cancer Clinical Trials**

Measure	Baseline/Source	Metric/Source	2016 Target	% Change
% of adults 18+ who participated in a cancer clinical trial as part of their treatment	3.3% (BRFSS, 2010)	No data available	5%	No data available

There are no additional data from BRFSS or other sources at this time to indicate the level of participation in Texas in a clinical trial as part of cancer treatment. CTNet, a cancer clinical trial network established by CPRIT in 2010, was abolished during the moratorium in 2012.

**For future consideration of metrics:**

- As of August 2014, Texas had 804 open and accruing cancer clinical trials out of a total of 3,576.

- Texas ranks 3<sup>rd</sup> in the number of trials, with California ranking 1<sup>st</sup> with 1,088 trials, and Massachusetts 2<sup>nd</sup> with 983 trials.
- CPRIT programs have resulted in 84 new clinical trials (5593 patient participants).<sup>1</sup>

1. <http://www.cprit.state.tx.us/images/uploads/CPRIT-Achievements-Report-2015-August.pdf>

## **Goal 16: Improve patient care by accelerating the movement of prevention interventions, therapeutics, and diagnostics into practice.**

### **Objectives**

16.1 Increase the life science infrastructure and number of jobs, and develop a diverse workforce as a result of public and private investments.

16.2 Increase statewide economic development as a result of public and private investments.

### **Strategic actions**

- Promote funding opportunities that support company formation, relocation and commercialization activities.
- Utilize a conflict-free review process at CPRIT that selects exemplary companies and projects with the highest potential for patient, public and economic impact.
- Support infrastructure in the state's academic institutions to promote efficiencies in cancer care.
- Increase opportunities for research and commercialization of new and more effective screening and early detection methods

### **Increase in Texas Bio Science Infrastructure and the Texas Ecosystem (2012-2014)**

While no metrics were provided for Goal 16 in the 2012 *Plan*, data on the number of Texas Biotech firms and the number of employees working in pharmaceutical and biotech have steadily increased from 3,500 firms with 89,600 employees in 2012 to 3600 firms employing 92,000 employees.<sup>1</sup> - Texas ranks second in the numbers of employees in life and physical sciences. And, for every biotech and pharmaceutical or medical device job created, an additional 2.3 jobs are created in Texas<sup>2,3</sup>.

In 2012, CPRIT awarded 6 grants for product development in cancer to private firms totaling \$60,849,537. By 2014, the number of companies with CPRIT investments had grown to 9 companies with a total of \$107,691,509 in funding. Since CPRIT requires its grantees to support their projects with a 2:1 match, the amount of angel or venture funding resulting from CPRIT grants in 2012 was approximately \$30.4 M increasing to approximately \$53.9 M in 2014<sup>3</sup>.

The overall total current impact of CPRIT operations (including secondary effects) includes a gain of some 37,690 jobs in Texas. Adding the economic benefits of CPRIT operations, prevention/screening programs, research, outcomes-based prevention/screening and secondary research provides a total gross impact of CPRIT funding in the State of Texas of nearly \$7.3 Billion in annual spending<sup>4</sup>

CPRIT is not the only state funding supporting cancer therapy innovation and economic development in Texas. The Texas Emerging Technology Fund provided \$ 143.87 M to companies developing cancer therapies and or technologies since its inception in 2013. <sup>1, 3,4</sup>

1. Battelle/BIO 2012 State Bioscience Industry Development Report
2. Texas Biotechnology Industry: 2014 [http://gov.texas.gov/files/ecodev/Biotech\\_Report.pdf](http://gov.texas.gov/files/ecodev/Biotech_Report.pdf)
3. Texas Enterprise Fund Report [http://gov.texas.gov/files/ecodev/TEF\\_Listing.pdf](http://gov.texas.gov/files/ecodev/TEF_Listing.pdf)
4. [An Economic Assessment of the Cost of Cancer in Texas and the Benefits of the Cancer Prevention and Research institute of Texas \(CPRIT\) and its Programs ; 2014 Update](http://www.cprit.state.tx.us/images/uploads/Perryman_CPRIT_Impact_2014-11-17.pdf)  
[http://www.cprit.state.tx.us/images/uploads/Perryman CPRIT Impact 2014-11-17.pdf](http://www.cprit.state.tx.us/images/uploads/Perryman_CPRIT_Impact_2014-11-17.pdf)

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