



**EVALUATION OF THE 2014-2015
PIMA COUNTY CLEAN AIR PROGRAM CAMPAIGN AND
CLEAN STORMWATER PROGRAM CAMPAIGN SURVEY**

(May 2015)

Executive Summary

Prepared for:

PIMA COUNTY DEPARTMENT OF
ENVIRONMENTAL QUALITY

Tucson, Arizona

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FMR ASSOCIATES, INC.

Tucson, Arizona

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Methodology Overview and Survey Tracking – This tracking survey, conducted for the Pima County Department of Environmental Quality (PDEQ), is comprised of a 500-person, randomly-selected and statistically-projectable sample of adult (16 or older) Pima County residents. The 2015 study utilized a split-methodology sampling plan, with an equal number of Telephone and Internet interviews (250 each). Prior surveys in this tracking study series were all conducted via telephone. Regardless of the sample source, the survey instrument and screening criteria were identical. All surveys were conducted during May 2015. A Spanish-language version of the final questionnaire design was prepared and made available to Telephone/Internet survey respondents who requested it.

Telephone surveys were conducted among randomly-selected men and women (16+) who live in Pima County. Similar to prior surveys, all Telephone respondents were further randomized by interviewing “the male or female in your household who is 16 or older and most recently celebrated a birthday.” There was only one interview conducted per household. Telephone interviews were distributed on the basis of geographic population density in Pima County – with specific steps taken to ensure a proportionate number of interviews in each of four zip code-defined survey “regions” (Northwest, Central, South and East) based on recent population estimates. The 2015 Telephone sub-sample is reflective of these geographic survey quotas.

Internet surveys were conducted online utilizing a questionnaire administered by FMR Associates and hosted on the sgizmo.com website. Potential survey respondents were contacted through a third party database Internet panel sample company that emailed invitations to their “opt in” panelists who reside in Pima County.

Once again, this project analyzed and tracked the overall effectiveness of the Clean Air Program after 25 campaign sessions. Also, for the third consecutive year, the survey measured and tracked key issues related to stormwater management and hazardous waste disposal for PDEQ’s Stormwater Program.

Awareness of the Pima County “Clean Air” Program – Overall, 45% are familiar with the Pima County “Clean Air” Program, with few differences between Telephone (46%) and Internet (44%) respondents. This is down from 2014 awareness levels (52%), but still higher than we found in 2013 (43%). Awareness is highest in the Northwest (52%) and South (48%) zip codes, as well as among those who perceive that the Tucson area has a progressively more severe air quality or stormwater pollution problem.

Awareness of Various Clean Air Events or Activities – Among the Telephone sub-sample, 92% are familiar with at least one “Clean Air” event or activity. This is highly consistent with the last two Telephone-only studies. In general, there is a lower degree of familiarity among the Internet sub-sample (78% are aware of at least one event/activity) – particularly for the three most familiar events.

However, as we have found in the past, awareness of specific events or activities continues to be significantly higher among respondents familiar with the “Clean Air” Program.

Consistent with prior surveys, the three “Clean Air” events with the highest degree of familiarity include:

- **“Bike to Work Day”** (62% awareness [65% Telephone versus 58% Internet], basically unchanged since 2014 [63%]. Recall is highest in the South or East zips.)
- **“Earth Day Festival and Parade”** (59% awareness [70% Telephone versus 48% Internet], down from 68% in 2014. There are few differences in awareness based on geography.)
- **“Bike Fest”** (52% awareness [66% Telephone versus 39% Internet], up from 45% in 2014. Awareness is somewhat lower only in Central region.)

One of four or more are familiar with the following (with no difference in awareness based on interview method):

- **“Walk and Roll to School Day”** (29% awareness, down progressively from 32% in 2014 and 36% in 2013. Northwest or South zip residents are more apt to be aware.)
- **“Car-Free Day”** (27% awareness, down slightly from 2015 [30%]. Awareness is elevated among Northwest or South residents.)
- **“Cyclovia”** (24%, up from 21% in 2015. There are few differences in familiarity based on geography.)

“Clean Air” Campaign Event Participation and Actions Taken – Among the 85% familiar with at least one “Clean Air” event, two of ten (regardless of interview method) report that they or someone in their household participated in one or more of these activities. This is the highest level of participation reported to-date, up from the previous high of 17% in 2011 and 2013. Event participation is highest in the Northwest or South zips and among 16 to 35 year-olds and non-Hispanic minorities. Among the two of ten who indicate participation in a “Clean Air” event, 69% say that they have changed (or are considering actions to change) their daily routines or behaviors to help improve air quality. This is up from 55% last year, but somewhat lower than we found in 2013 (76%). This willingness to change is higher among Internet (72%) than Telephone (65%) respondents. Among the total sample, this means that 11% indicate a change in behavior after participating in a “Clean Air” program event. This ties the all-time high recorded in 2013, and is up from 6% in 2014. In the current study, Central residents, non-Hispanic

minorities and households impacted by a breathing-related medical condition are most apt to indicate a change in (or willingness to change) routines or behaviors to improve air quality.

Opinion of Activities/Events – Fully 85% familiar with at least one “Clean Air” event have a favorable opinion of “events that encourage people to use other modes of transportation or work from home instead of driving alone.” This is up from 73% in 2014, but consistent with 2011 and 2013 findings. Significantly, 47% are “very favorable” of such events in the 2015 survey – the highest percentage recorded to-date. Those “very favorable” of activities and events to encourage use of other modes of transportation include South residents and Hispanics. A high degree of favorability is also directly related to the perceived seriousness of the air quality problem. In line with recent surveys, just one of ten have a negative opinion (to any degree) of air quality events.

Steps Taken to Reduce Air Pollution – Allowing for multiple mentions (unaided in the Telephone survey and aided in the Internet survey), the four steps most often taken by residents (especially those aware of the “Clean Air” Program) to help reduce air pollution in the Tucson area include:

- **Keep tires inflated properly** (39%, up significantly from the previous record mention in 2014 [22%]. East residents and those who perceive a “minor” air quality problem are more apt to indicate they are keeping tires inflated properly. Internet respondents [59% versus 18% Telephone] are also especially more apt to take this action.)
- **Keep car tuned** (35%, up from 25% in 2014. Most likely to keep their car tuned are East residents and Internet respondents [45% versus 25% Telephone], with fewer differences based on air quality problem perception.)
- **Generally reduced driving** (35%, down from 44% in 2014 [when it was the top mention]. These tend to be Northwest region residents and Internet respondents [41% versus 28% Telephone] – along with those who perceive a “moderate” air quality problem.)
- **Carpool/Less driving alone** (32%, up from 28% in the past two surveys. There is little difference based on interview method or ethnicity. Instead, Central or Northwest residents and those who perceive a “major” or “moderate” air quality problem tend to be carpooling more.)

Another 17% say that they have **planted trees** to help reduce air pollution – up from just 5% just two years ago. Other significant actions taken include: **bought a more fuel efficient car** (13%, unchanged since 2014), **bought bicycles** (12%, up from 6%), **avoid excessive idling** (unchanged at 12%), **choose one day a week not to drive** (10%, up from 6%), **moved closer to work** (8%, up from 2%), **adjusted vehicle’s emission control equipment** (basically unchanged at 11%) and/or **use BBQ grill less** (6%, up from 2%).

Consistent with last year, 16% overall indicate that they have done **nothing** to reduce air pollution. These tend to be residents unaware of the “Clean Air” Program (19% versus 11% familiar).

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School Materials Recall Among School Age Children – One of four (26%) indicate that they have children between the ages and 5 and 18 living in their household (up from 22% last year, but lower than we found in 2013 [33%]). These tend to be South or East region residents and Hispanics.

Just less than half of households with children ages 5 to 18 report that these kids have “talked about or brought home materials from school about improving air quality” (45%). This is down from last year’s record mention (54%), but higher than we found in 2013 (40%). Recall in the current study is highest among Northwest zip residents, those who perceive a “major” air quality problem and residents aware of the “Clean Air” Program (61% versus 34% unfamiliar).

Air Pollution Statement Evaluations – The following is a summary of agreement/disagreement with twelve statements related to program awareness, pollution awareness, topics and knowledge:

PDEQ and Rideshare Awareness –

- **You are aware of the Pima County Department of Environmental Quality** (60% agree, down from 2014 [68%] and 2013 [64%] levels. Telephone respondents [67% versus 54% Internet], Northwest residents and those familiar with the “Clean Air” Program are more aware of PDEQ.)
- **You are aware of the services provided by Sun Rideshare** (55% agree, up from 49% in 2014 and 45% in 2013. Awareness is higher in the Northwest region and among those familiar with the “Clean Air” Program.)

PDEQ Program Awareness –

- **You have seen or heard information about the importance of keeping your tires properly inflated** (88% agree, essentially unchanged since last year [90%] – with few differences based on geography.)
- **You are aware of the “Clean Water Starts With Me” campaign** (47% agree, identical to the 2014 survey. South zip residents and those who perceive that Tucson has a “moderate” or “serious” stormwater pollution problem are most likely to indicate

awareness. Campaign awareness is also significantly higher among residents aware of the “Clean Air” Program.)

- **You have seen or heard the phrase “Keep Our Blue Skies Blue”** (New to the current study, 43% recall this phrase – more often South region residents and those familiar with the “Clean Air” Program.)
- **You have seen or heard the phrase “Healthy Air Is in Our Hands”** (A new statement included in the 2015 survey, 26% are familiar with this phrase. Recall is marginally higher in the Northwest zips and among those familiar with the “Clean Air” Program.)

Air Pollution Evaluations –

- **You are aware that air pollution causes health problems** (95% agree, up slightly from last year [94%.])
- **You understand what an air pollution advisory means** (85% agree, just slightly lower than recent surveys [87%-89%]. Agreement is marginally higher in the Northwest zips.)
- **You are aware that the majority of our air pollution comes from motor vehicle use** (82%, unchanged over the past two years [81%-82%] – with few differences based on geography or “Clean Air” Program awareness.)
- **You have seen or heard commercials on TV or radio regarding clean air or air pollution** (66% indicate agreement. This is down from last year [80%], but generally consistent with 2013 findings [68%]. Recall is higher among Telephone respondents [72% versus 60% Internet], South residents and those aware of the Pima County “Clean Air” Program.)
- **You are aware of air pollution advisories in Pima County** (64% agreement, down from 78% in 2014 [when the statement referenced Tucson, not Pima County]. Agreement is slightly lower only in the East region, and is greater among those aware of the “Clean Air” Program.)
- **Because you want to reduce air pollution, you are generally driving less** (58% agree, representing incremental growth from 2014 [55%] and 2013 [53%]. Geographically, only East residents are less likely to agree. Agreement is higher among Hispanics, Telephone respondents [63% versus 53% Internet] and those aware of the “Clean Air” Program.)

Actions Taken to Drive Less to Reduce Air Pollution – Among the 58% who indicate that they are driving less to reduce air pollution, most (regardless of air quality problem perception) indicate that they **reducing or combining trips** (53%). These tend to be South or East region residents.

Other actions taken to drive less to reduce air pollution include:

- **Walking for short trips or errands** (29%, most often non-Hispanic minorities, Internet respondents [46% versus 15% Telephone] and those who perceive a progressively less severe air quality problem.)
- **Carpooling/Van pooling** (21%, lower only in the Central zips.)
- **Riding the bus** (20%, more often Northwest residents.)

Among the rest, others are **riding a bicycle for short trips/errands** (9%), **walking to work or school** (8%), **riding a bicycle to work or school** (7%), **telecommuting** (5%) **working a compressed workweek** (5%) and/or **driving less in general** (5%).

Travel Behavior for Shopping – One-half say they generally **drive alone** for shopping. Three of ten **carpool with 1 to 4 other adults**, while others take the **bus** (9%), **walk** (4%), **bicycle** (3%) or **vanpool with 5 or more other adults** (2%). Results are generally consistent regardless of sample. Compared to 2007 – the last time this question was asked – significantly fewer are driving alone for shopping purposes (from 77% to 50%). Instead, many more are using alternative modes of transportation, particularly carpooling (from 18% to 29%) and taking the bus (from 1% to 9%).

Carpooling for shopping is consistent regardless of geography, while Central residents and those who perceive a “major” air quality problem are more apt to take the bus. Meanwhile, South or East residents are more apt to drive alone for shopping.

Travel Behavior for Leisure Purposes – For leisure purposes (“such as dining out, meeting with friends, going to the movies, going to the gym, etc.”), more respondents indicate that generally **carpool with 1 to 4 other adults** (43%) than **drive alone** (39%). Internet respondents are especially apt to carpool (48% versus 34% drive alone), while more in the Telephone sample drive alone (44%) than carpool (38%). In lesser numbers (and regardless of sample), others say they take the **bus** (6%), **walk** (4%) or **bicycle** (2%) for leisure purposes. Consistent with shopping travel behavior, there has been a marked decrease in driving alone for leisure purposes (from 60% to 39%) – while use of alternative modes has increased.

Carpooling for leisure purposes is highest in the East zips and among non-Hispanic minorities. Central residents and lower income-types are more apt to take the bus or walk. The incidence of driving solo for leisure travel is relatively consistent regardless of geography.

Perceived Seriousness of Air Quality Problem in Tucson Area – Among the Telephone sub-sample, 17% indicate that Tucson has a “major” air quality problem. This is consistent with the last two Telephone-only samples in 2013 and 2014 (17%-18%). However, among the 2015 Internet sub-sample, just 11% perceive a “major problem.” Among the combined Internet-Telephone sample, this results in an overall 14% “major problem” response (down from 17%-24% in recent surveys). Instead, more overall now indicate that a “moderate problem” exists (from 52% in 2014 to 57% now) – while slightly fewer think it is a “minor” issue (from 27% to 24%). The perception of a “major” air quality

problem is greater among East region residents, 26 to 45 year-olds, Hispanics and households impacted by a breathing-related medical condition, as well as those aware of the “Clean Air” Program and residents who perceive there to be a “serious” stormwater pollution problem. The perception of a “minor” air quality problem is lower only in the Central zips (18% versus 26%-29% elsewhere), and elevated among men, the oldest (66+) respondents and those with some college or more.

Work Commuting Behavior – Among the 2015 in-tab sample (and allowing for more than one category of response), and consistent with 2014 (30%), 31% in the 2015 survey indicate they are employed full-time. Another 13% work part-time, up from 8% in 2014 (but consistent with 11% in 2013). Similar to the past two years, one of ten report being currently unemployed (11%), more often Central or South area residents. Down from last year (38%), 26% in the 2015 survey say they are retired, more often Northwest or South region residents. Another 12% are homemakers, up from 9% in 2014 but similar to 2013 findings (13%). Compared to last year, more report being students (11%) – although this is more in-line with 2013 (9%).

Similar to last year, most full-time employees report working a “standard” schedule (8 hour days, five days a week) (unchanged at 56%). Another 14% work a 10 hour day, 4 days a week (up from 10% in 2014), while 6% indicate working a 12 hour day, 3 or 4 days a week (6%, up slightly from 5% in 2014). As in 2014, 4% report working 80 hours over 9 days, with the 10th day off. Overall, two of ten report some “other” workweek options or say their workweek varies – down from 2014 (26%), but consistent with 2013 (19%).

Seven of ten use **single passenger commuting to work or school** (70%). This is down significantly from 2014 (83%) and is the lowest total to-date. While Internet respondents were even less apt to use single passenger commuting (66%), Telephone respondent usage of this mode is still tied with the lowest levels from previous surveys (74%, tied with 2008). The average frequency of use is 4.3, down slightly from 2011-2014 levels (4.5 each). East area residents are most apt to drive alone at least one day a week (79%), while Northwest area residents are *least* apt to drive alone 5+ days a week (25% versus 42%-50% in other regions).

Why do single occupant vehicle commuters drive alone to and from work or school? Down from 2014 (20%), but consistent with 2013 (33%), one-third indicate that “**convenience**” is the reason they drive alone. This is especially true among Internet respondents, with little difference based on geography. A close second, “**irregular work hours**” is cited by three of ten (up from 27%). Central area residents and Internet respondents are more apt to offer this reason. Another one of four say that “**no one to carpool with**” is the reason they drive alone (26%, down slightly from 27%), more often Telephone respondents and Northwest area residents. Down from one of four last year, 16% say that they “**like to drive alone**” – with a lower share only among East area residents. Internet respondents are also more apt to offer this reason. Another 15% indicate they “**need their car for business**” (up from 9%), while 11% (up from 2%) cite “**personal errands**” as the reason they drive alone. Using their car for business is greater among Central area residents, while personal errands are cited less only among South respondents. Internet respondents are more apt to mention personal errands. Less than one of ten say there is “**no bus service in the area**” (8%, down from 13%) or

cite a “**child drop off**” (7%, up from 2%). East area residents are more apt to cite both of these reasons.

Returning to 2013 levels (26%) after a dip in 2014 (10%), 24% say they **carpool or vanpool** at least one day per week. Compared to 2014, average frequency has increased (from 3.1 to 3.6 days) – although this is still lower than 2013 (3.9 days). The incidence of carpooling is greater in the Northwest and South areas.

Use of Alternative Work/School Commute Modes – The following is a summary of the use of alternative modes for commute travel:

- **Walk to work or school** (The share who walk to work or school has increased significantly [from 6% to 21%], with an increase in average days as well [from 2.3 days to 3.5]. Internet respondents are particularly apt to use this mode [27%], although a significant share of Telephone respondents do as well [12%]. Most likely to walk to work or school are Central or South area residents.)
- **Ride the bus to work or school** (Bus ridership has increased from 10% in 2014 to 14% now, typically due to higher Internet respondent usage of this method. The average days using this method has returned to 2013 levels [3.8, up from 3.1 in 2014]. Central or South region residents are more likely to take the bus to work or school.)
- **Work at home instead of driving to work** (While telecommuting has returned to 2013 levels [14%, up from 7% in 2014], the frequency of usage has declined from 3.5 days to 2.5.)
- **Ride a bike to work or school** (More are riding bikes to work or school [12%, compared to 1% in 2014 and 9% in 2013], and are doing so more often [from 1.5 days to 2.8 days]. Central area residents and 16 to 25 year-olds are more apt to be riding a bike to work or school.)
- **Take the streetcar to work or school** (New to this survey, 5% report using this mode of transportation at least one day a week, and do so 2.2 days a week on average.)

Most Used Mode of Transportation for Work/School Commute – Consistent with the lowest incidence of **single-passenger vehicle commuting**, the share who say it is their **most-used** method of commuting has decreased (from 80% in 2014 to 58% now). Primary use of single-passenger commuting is lower among Internet respondents (52%) than Telephone respondents (65%). East area respondents are particularly reliant on driving alone (76%). Meanwhile, more apt to primarily use an alternate mode are Northwest area residents.

Compared to last year, more are **carpooling** most often (from 5% to 12%), although this is consistent with 2013 (12%). Northwest area residents are more apt to carpool. More are also **walking** as their most-used mode of transportation (from 2% to 9%), especially Internet respondents (13% versus 3% of Telephone respondents) and South or Central area residents. **Bus riding** has increased slightly (from 6% to 8%), with greater primary usage among Central area residents. Another 5% report **telecommuting** most often (up slightly from 4%), especially Central zip code residents. In lesser numbers, others

indicate that **riding a bike** (3%, up from 1%) or **riding a motorcycle** (unchanged at 2%) or **taking the streetcar** (2%) are their primary mode of commuting to work or school.

Miles Traveled to Work or School – Overall, work commute distances skew shorter than in 2014, and are more consistent with 2013 distances. Three of ten report a commute of 5 miles or less (down from 14% in 2014, but consistent with 29% in 2013), while another one of four say their commute is between 6 and 10 miles (unchanged at 26%). Another 7% report travelling 11 to 14 miles (down slightly from 9%). One-third say they travel 15 miles or more (33%, down from 41%). Overall, Telephone respondents report longer commute distances than Internet respondents. Geographically, South area residents are more apt to say their commute is 15+ miles (46%), while seven of ten Central residents travel 10 miles or less.

Telecommuting – Similar to the two previous surveys (17%-19%), 18% of those who work outside the home indicate that they telecommute. The incidence of telecommuting is greatest in the Northwest zips. Among telecommuters, compared to 2014 (64%), fewer indicate they telecommute more than once a week (39%). Instead, more telecommute about once a week (39%, up from 8% in 2014). Another 15% now report telecommuting 2-3 times a month (unchanged at 12%) or once a month (3%, down from 16%).

“Compressed Workweek” Programs – Among those who work outside the home, 27% say they have the option of a compressed workweek program. This is up from 2014 (23%), but still lower than 2013 findings (32%). Northwest or South area residents are more apt to indicate they have a compressed workweek available to them.

Daily Commuter Miles Saved Through Alternate Modes – Based on the combination of results related to modes of commuter travel and distances traveled with employment estimates (Source: Department of Commerce), we estimate that the reduction of single-occupant vehicles commuting through the use of alternative methods of travel saves **3,840,196** vehicle miles per day – or **34%** of total miles driven/not driven. The percentage of miles saved has increased from 16% in 2014 to 34% in 2015 – which is consistent with our 32% finding in 2013.

While the percentage of miles saved through the use of alternate modes has increased to 34%, the actual number of vehicle miles saved daily has increased by 115% (from 1,780,430 to 3,840,196) – primarily due to the decrease in single-passenger commuters (from 83% to 70%). In fact, current levels of single-passenger commuting are the lowest recorded (70%). The second lowest occurrence of single-passenger commuting occurred in 2008 (74%).

Daily Shopping/Leisure Miles Saved Through Alternate Modes – Utilizing trip frequency/length estimates provided by Pima Association of Governments in combination with the “most used” methods of transportation (Tables 18/18a in our report), we can further estimate daily vehicle miles saved through the use of alternative modes for shopping and leisure purposes. As indicated below, we estimate that the reduction of single-occupant vehicles commuting through the use of alternative methods of travel for **shopping** saves 713,726 vehicle miles per day, or 35.8% of total miles driven/not driven. The number of **leisure** travel miles saved daily is 3,640,445 – 41.5% of total miles driven/not driven. These compare to a savings of 3,840,196 vehicle miles per day in **travel to work or school** (or 34% of total miles driven/not driven).

2015 Estimated Number of Shopping Miles Saved Through Alternative Modes

Mode	(A) % Take Mode Most Often	(B) # Daily Shopping Trips	(C) Average Shopping Miles	(D) Total Miles Traveled	(E) Miles Driven	(E) Miles Not Driven
Drive alone	51.0%	398,487	5.0	1,016,142	1,016,142	0
Motorcycle	0.8%	398,487	5.0	15,939	15,939	0
Carpool/Vanpool	31.5%	398,487	5.0	627,617	241,391	386,226
Bus	9.2%	398,487	5.0	183,304	5,237	178,067
Walk	4.3%	398,487	5.0	85,675	0	85,675
Bicycle	2.6%	398,487	5.0	51,803	0	51,803
Streetcar	0.6%	398,487	5.0	11,955	0	11,955
	--	--	--	1,992,435	1,278,709	713,726

- (A) From Table 18.
- (B) Source: Pima Association of Governments.
- (C) Source: Pima Association of Governments.
- (D) = (A) x (B) x (C).
- (E) Carpool: based on workers average carpool/vanpool of 2.6 (from Table 26b). Bus: based on average of 35 riders/bus. Walk/bicycle/streetcar: no polluting vehicles used.

2015 Estimated Number of Leisure Miles Saved Through Alternative Modes

Mode	(A) % Take Mode Most Often	(B) # Daily Leisure Trips	(C) Average Leisure Miles	(D) Total Miles Traveled	(E) Miles Driven	(E) Miles Not Driven
Drive alone	40.0%	1,518,736	5.78	3,511,318	3,511,318	0
Motorcycle	1.0%	1,518,736	5.78	87,783	87,783	0
Carpool/Vanpool	45.1%	1,518,736	5.78	3,959,010	1,522,696	2,436,314
Bus	6.4%	1,518,736	5.78	561,811	16,052	545,759
Walk	4.5%	1,518,736	5.78	395,023	0	395,023
Bicycle	2.0%	1,518,736	5.78	175,566	0	175,566
Streetcar	1.0%	1,518,736	5.78	87,783	0	87,783
	--	--	--	8,778,294	5,137,849	3,640,445

- (A) From Table 18a.
- (B) Source: Pima Association of Governments.
- (C) Source: Pima Association of Governments.
- (D) = (A) x (B) x (C).
- (E) Carpool: based on workers average carpool/vanpool of 2.6 (from Table 26b). Bus: based on average of 35 riders/bus. Walk/bicycle/streetcar: no polluting vehicles used.

Final Air Quality Campaign Observations

General awareness of the Pima County “Clean Air” Program has decreased by 13% since 2014, from 52% to 45%. Fully 85% are familiar with at least one “Clean Air” event. In line with past years, there continues to be a significant difference in key attitudes and behaviors related to air quality among those aware of the “Clean Air” Program and those unaware (45% and 49%, respectively). This relationship continues to be readily apparent, as summarized in the comparative displays below.

<u>Some key differences:</u>	<u>Difference</u>	<u>“Clean Air” Program</u>	
		<u>Aware</u> (45%)	<u>Unaware</u> (49%)
Air Quality Event Awareness			
Earth Day Festival & Parade			
2015	+45%	71%	49%
2014	+21%	75%	62%
Bike to Work Day			
2015	+49%	76%	51%
2014	+50%	75%	50%
Bike Fest			
2015	+43%	63%	44%
2014	+37%	52%	38%
Walk and Roll to School Day			
2015	+159%	44%	17%
2014	+100%	42%	21%
Car-Free Day			
2015	+246%	45%	13%
2014	+133%	42%	18%
Cyclovia			
2015	+82%	31%	17%
2014	+73%	26%	15%
• Participation in a “Clean Air” event			
2015	+71%	24%	14%
2014	+67%	15%	9%

✓ **On average, there is a 99% higher awareness and/or participation in “Clean Air” events or programs among those familiar with the “Clean Air” Program – up from 95% in 2014.**

<u>Some key differences:</u>	<u>Difference</u>	<u>“Clean Air” Program</u>	
		<u>Aware</u> (45%)	<u>Unaware</u> (49%)

PDEQ and Sun Rideshare Awareness

• Aware of PDEQ			
2015	+118%	85%	39%
2014	+87%	86%	46%
• Aware of Sun Rideshare services			
2015	+50%	66%	44%
2014	+39%	57%	41%

✓ **On average, there is an 84% greater awareness of PDEQ and Sun Rideshare services among those aware of the “Clean Air” Program.**

PDEQ Activity Understanding

• Understand air pollution advisory meaning			
2015	+16%	92%	79%
2014	+18%	94%	80%
• Aware of Pima County air pollution advisories			
2015	+60%	80%	50%
2014	+33%	88%	66%
• Seen or heard TV/radio commercials regarding clean air or air pollution			
2015	+52%	82%	54%
2014	+19%	86%	72%
• Seen or heard information about the importance of keeping tires properly inflated			
2015	+6%	91%	86%
2014	+13%	95%	84%

✓ **On average, there is a 34% higher understanding of PDEQ activities among those aware of the “Clean Air” Program.**

<u>Some key differences:</u>	<u>Difference</u>	<u>“Clean Air” Program</u>	
		<u>Aware</u> (45%)	<u>Unaware</u> (49%)
<i>Steps Taken to Reduce Air Pollution</i>			
• Keeping tires properly inflated			
2015	+23%	43%	35%
2014	0%	23%	23%
• Keep car tuned			
2015	+22%	39%	32%
2014	+13%	27%	24%
• Driven less/Reduced Driving			
2015	+19%	38%	32%
2014	+15%	47%	41%
• Carpool more/Less solo driving			
2015	+39%	39%	28%
2014	+11%	30%	27%
✓ There is a 26% greater likelihood of taking specific steps to reduce air pollution among those aware of the “Clean Air” Program.			

Air Quality Perceptions

• Perceive that Tucson area has a “moderate” or “major” air quality problem			
2015	+18%	77%	65%
2014	+26%	77%	61%
✓ There is an 18% greater perception of air quality problems in the Tucson area among those aware of the “Clean Air” Program (down from 26% last year, but higher than in 2013 [12%]).			

Clearly, these findings and tracking results again suggest that the “Clean Air” Program increases awareness, belief and actions related to improving air quality. Consequently, targeting those unaware of the program continues to be a key recommendation of this study. And what is the profile of Pima County residents unfamiliar with the “Clean Air” Program? Central and East area residents, 16 to 25 or 36 to 55 year-olds, non-Hispanic minorities and the newest (less than 2 years) Pima County residents. Central residents and those 16 to 25 or 66 and older, along with Northwest residents and non-Hispanic minorities, are also among those most likely to indicate a change in behavior as a result of their participation in “Clean Air” Program activities. As a result, promotional, communication and awareness-building efforts should be targeted towards these groups.

This study again highlights the increased benefit of greater promotional, marketing, branding and advertising efforts – to the extent possible – in order to expand awareness of the “Clean Air” Program (as well as awareness of and participation in specific events), especially to reach the sub-groups identified above.

Tire Inflation Education Campaign – Fully nine of ten “have seen or heard information about the importance of keeping your tires properly inflated” (88%), and the percentage who now say they are keeping their tires properly inflated to help reduce air pollution in the Tucson area has continued to increase, from 7% in 2013 to 22% in 2014 to 39% now.

What is the direct impact of this action taken to keep tires properly inflated? There are an estimated 638,619 working vehicles (automobiles, vans and trucks of one-ton capacity or less for household use) in Pima County (source: 2013 American Community Survey). A vehicle will save 144 gallons of gasoline per year with properly inflated tires (source: PDEQ).

If 39% are keeping their tires properly inflated, this yields an annual reduction of 35,864,843 gallons of gasoline not purchased (along with the pollutants this gasoline would release). This is a 79% increase from 20,053,345 gallons saved in 2014 (when 22% indicated they were keeping their tires properly inflated).

Stormwater Perceptions and Practices

Perception of Where Stormwater That Flows Into Tucson Storm Drains Ends Up –

After being told that streets in the Tucson area are equipped with storm drains, 45% indicate that (to the best of their knowledge) the water that flows into these drains ends up in a **river or wash** (down from 49% last year). This is especially true in Central or Northwest zip codes.

Allowing for multiple responses, others think that stormwater that flows into storm drains ends up in:

- ✓ **Groundwater** (15%, up from 7%-8% in previous surveys. These are more often Northwest or East zip residents.)
- ✓ **Sewage plants** (11%, unchanged over the last two years. There are few differences with respect to sample or geography.)
- ✓ **Canals** (7%, up from 3%-4% in 2013-2014, with few differences based on geography.)
- ✓ **Water plants** (7%, up slightly from 5%-6% in the last two years, more often 5 Internet respondents [9% versus 4% Telephone].)

Most of the rest (33%, consistent with the past two surveys) **do not know** where stormwater ends up. These tend to be Telephone respondents and South residents.

Low Impact Development Practices Implemented/Installed – Compared to last year, usage of Low Impact Development (LID) practices (at home or business) is generally lower for each, primarily related to lower implementation among the Internet sample. However, as indicated below, the rank order position of the seven LID practices is generally unchanged:

- **Landscaping with native plants** (52% [57% Telephone/47% Internet], down from 59% in 2014. More often East region residents.)
- **Landscaped depressions that collect stormwater** (26% [32% Telephone/20% Internet], down from 38%. There are few differences with respect to geography.)
- **Water harvesting with rain barrels or cisterns** (20% [24% Telephone/15% Internet], down from 24%. Implementation is directly related to perceived seriousness of the stormwater pollution problem.)
- **Porous pavements or bricks** (20% [26% Telephone/14% Internet], down from 30% – more often East zip residents.)
- **Connecting runoff from a roof or paved surface to a basin or to water plants** (20% [24% Telephone/15% Internet], down from 32%. These tend to be Northwest residents and those who think Tucson has a progressively more severe stormwater pollution problem.)
- **Natural areas protected from clearing and grading** (16% [22% Telephone/9% Internet], down from 26%. Implementation is higher in the East zips.)

- **A trench that is filled with gravel to collect stormwater** (14% [17% Telephone/11% Internet], down from 24%. Usage of this LID is relatively consistent regardless of geographic area.)

Perceived Seriousness of Storm Water Pollution Problem in Tucson Area – As in prior surveys, the overwhelming majority (87%) indicate that Tucson area has a “moderate” (50%) or “serious” (37%) problem “with polluting materials entering storm drains.” The balance (13%) perceive that there is a “minor” problem. This results in a 5.7 average score on the “1-to-9” rating scale (versus a 5.8 last year). The perception of a “serious” stormwater pollution problem is highest in the Central zips, as well as among women, 26 to 35 year-olds, non-Whites and Telephone respondents (42% versus 32% Internet).

Rating of Various Contributors to Storm Water Pollution Problem in the Tucson Area – Using the same “1-to-9” scale, about eight of ten overall indicate that these five factors are “serious” or “moderate” contributors to stormwater pollution:

- **Automotive fluids such as oil, gasoline and brake fluid** (41% “serious” contributor, 81% to some degree [5.7 average score, up from 5.5 in 2014]. Northwest residents, are more apt to believe that automotive fluids contribute to stormwater pollution.)
- **Chemicals and materials from construction sites** (40% “serious” contributor, 83% to some degree [5.7 average score, up from 5.5 in 2014]. These tend to be Central region residents.)
- **Chemicals and materials from industrial facilities** (39% “serious” contributor, 81% to some degree [5.7 average score, up from 5.5 in 2014], especially Central residents.)
- **Household products such as cleaning fluids, detergents, paints, degreasers and bleaches** (37% “serious” contributor, 79% to some degree [5.5 average score, up slightly from 5.4 in 2014]. Household products are considered more of a significant contributor to stormwater pollution among Central residents.)
- **Household trash and bulky items like mattresses, sofas and tires** (35% “serious” contributor, 78% to some degree [5.5 average score, up significantly from 4.9 in 2014]. Slightly lower only in the South zips [5.2 versus 5.4-5.6 elsewhere], with higher scores among Internet respondents [5.8 versus 5.1 Telephone].)
- **Pesticides, fertilizers and debris from lawns and gardens** (36% “serious” contributor, 78% to some degree [5.4 average score, down slightly from 5.5 in 2014]. These tend to be Central residents.)

Similar to prior surveys, about four of ten do not think that **animal waste from household pets** contributes to the stormwater pollution problem (39%, down from 43% last year). Just 22% continue to identify household pet animal waste as a “serious” contributor (4.5 average score, up slightly from 4.3).

Methods Used to Dispose of Various Types of Household Hazardous Waste – The most used methods to dispose of household wastes (such as household chemicals, automotive fluids and lawn & garden chemicals) include:

- **Hazardous waste collection site** (47%, down from 59% in 2014 – but consistent with 2013 findings. Usage is lower only in the Central zips [44% versus 47%-51% elsewhere].)
- **Auto parts store** (38%, down from previous surveys [46%-50%]. These tend to be East region residents and Hispanics.)
- **Put in the garbage** (28%, up slightly from last year [26%], but short of the 2013 mention [30%]. Usage of this method is generally consistent regardless of geography.)
- **Service station** (22%, returning to 2013 levels after an increase in 2014 [32%]. East zip residents are more apt to take household waste to a service station.)
- **Landfill** (19%, identical to 2013, but down from last year [30%]. Landfill users are more likely to be South residents.)

Of these most mentioned methods of disposal, Telephone sample respondents (compared to Internet) are more apt to use each – especially a hazardous waste collection site (55% Telephone versus 40% Internet) and service station (30% Telephone versus 13% Internet).

In lesser numbers, fewer (regardless of sample) indicate that they dispose of household hazardous waste by **pouring it in the sink or down the drain** (from 11%-12% to 8% now).

As we have found in prior studies, less than one of ten are not sure how they dispose of household hazardous wastes (9% versus 6%-8%). However, up from 7%-10% in prior years, 17% say they never use these types of products or finish them all up when used.

Government Entity to Call If Witness Someone Dumping Trash or Chemicals in a Storm Drain – Generally consistent with prior years, one-third in the 2015 study are not sure who they would contact if they saw someone dumping trash or chemicals into a storm drain and wanted to report it. These tend to be East region residents and Internet respondents (37% versus 30% Telephone).

Among those who specify a particular entity, three of ten would call **911 or the police department** – highly consistent with the last two surveys. East zip residents are more apt to call 911. Another 13% would contact the **water department** (up from just 4%-5% in past surveys) – most often South residents and Internet respondents (22% versus 4% Telephone).

About one of ten overall indicate that they would contact the **sanitation department** (11%, up from 6% in 2014), **city government** (10%, up from 7%), **health department** (10%, up from 4%) or **county government** (unchanged at 9%). Once again, just 4% specify that they would *not* report illegal waste disposal or dumping.

Likelihood of Taking Part in Various Activities to Help Keep Stormwater Clean –
Most report that they would be “very likely” (with few “not at all likely”) to participate in these activities to help keep stormwater clean:

- **Safely dispose of chemicals** (76% “very likely” to participate, down somewhat from 82% last year. East region are especially apt to indicate likely participation [85% versus 72%-77% elsewhere].)
- **If you have a dog, using a doggie bag to clean up after them** (76% “very likely” to participate, down just slightly from 80%. Central or East residents are most apt to indicate a high likelihood of participation.)
- **Report a spill** (58% “very likely,” down from 75% in 2014. Still, less than one of ten are “not at all likely” to report a spill. Northwest or East residents and Telephone respondents [66% versus 50% Internet] are especially willing to report a spill.)
- **Replacing a toxic compound with a non-toxic compound** (56% “very likely,” down from 67% last year. These tend to be South or East zip residents and Telephone respondents [64% versus 48% Internet].)
- **Gathering stormwater to use for watering plants** (New to the current survey, 53% are “very likely” to participate – most often Northwest or East residents. Just 13% are “not at all likely” to gather stormwater to use for watering plants.)

Compared to last year, fewer are “very likely” to **implement Low Impact Development practices** (from 54% to 41%). However, just one of ten remain “not at all likely.” Who is “very likely” to potentially implement LIDs? Northwest region residents and Telephone respondents (46% versus 36% Internet).

Final Stormwater Program Campaign Observations

Nearly one-half (47%) indicate awareness of the “Clean Water Starts With Me” campaign, identical with 2014 findings. Significantly, there are key differences between those familiar with the “Clean Water Starts With Me” campaign (47%) and those who are not (53%) with respect to key perceptions and actions related to stormwater pollution.

Residents aware of the “Clean Water Starts With Me” campaign are much more apt to perceive that Tucson has a “serious” stormwater pollution problem (40% versus 34% of those unaware). In addition, just 6% of those aware of the campaign perceive that stormwater pollution is “not a problem” (versus 19% of those unfamiliar).

Are there differences related to the perception of where stormwater that flows into Tucson storm drains end up? Not really – the largest share (regardless of campaign awareness) think that stormwater flows in a river or wash (45%). However, more unaware of the “Clean Water Starts With Me” campaign are unsure where stormwater ends up (36% versus 29% of those aware).

As indicated in the following displays, there are some additional differences related to the perceived factors that contribute to the stormwater pollution problem and the likelihood of taking specific actions to help keep stormwater clean.

<u>Some key differences:</u>	<u>Difference</u>	<u>“Clean Water Starts With Me”</u>	
		<u>Aware</u> (47%)	<u>Unaware</u> (53%)
<i>Low Impact Development Practices Implemented/Installed at Home/Business</i>			
Landscaped depressions that collect stormwater	+36%	30%	22%
Water harvesting using rain barrels/ Cisterns	+50%	24%	16%
Connecting runoff from a roof or paved surface to a basin or to water plants	+67%	25%	15%
Trench that is filled with gravel to collect stormwater	+54%	17%	11%

✓ **There is a 52% higher usage of Low Impact Development Practices among those aware of the “Clean Water Starts With Me” campaign.**

<u>Some key differences:</u>	<u>Difference</u>	<u>“Clean Water Starts With Me”</u>	
		<u>Aware</u> (47%)	<u>Unaware</u> (53%)
“Serious” Contributors to Stormwater Pollution...			
Pesticides/Fertilizers/Lawn & garden debris	+25%	40%	32%
Automotive fluids	+31%	47%	36%
Household products	+53%	46%	30%
Construction site chemicals/materials	+35%	46%	34%
Industrial facility chemicals/materials	+32%	45%	34%
Animal waste from household pets	+37%	26%	19%
Household trash and bulky items	+26%	39%	31%

- ✓ **There is a 34% higher rating/awareness of “serious” contributors to the stormwater pollution problem in the Tucson area among those aware of the “Clean Water Starts With Me” campaign.**

<u>Some key differences:</u>	<u>Difference</u>	<u>“Clean Water Starts With Me”</u>	
		<u>Aware</u> (47%)	<u>Unaware</u> (53%)
“Very Likely” to Take Actions to Help Keep Stormwater Clean			
Safely dispose of chemicals	+11%	80%	72%
Implement Low Impact Development practices	+28%	46%	36%
Report a spill	+39%	68%	49%
Using a doggie bag to clean up after a pet	+11%	80%	72%
Replacing a toxic compound with a non-toxic compound	+35%	65%	48%
Gathering stormwater to use for watering plants	+23%	59%	48%

- ✓ **There is a 24% higher strong likelihood of taking specific actions to help keep stormwater clean among those aware of the “Clean Water Starts With Me” campaign.**

Regardless of campaign awareness, about one-half dispose of household hazardous waste by taking it to a hazardous waste collection site (47%). However, those aware of the “Clean Water Starts With Me” campaign are more likely to take hazardous waste to an auto parts store or service station. In addition, residents unfamiliar with the campaign are more likely to dispose of household hazardous waste by putting in the garbage (31% versus 24% of those familiar).

All of these findings do suggest that “Clean Water Starts With Me” campaign awareness does have a positive impact on the perceptions, knowledge and willingness to act related to the stormwater pollution problem in Tucson.

As a result, we suggest targeting those not currently aware of the “Clean Water Starts With Me” campaign for future outreach/education efforts – including those in the East region zip codes, 2-to-5 year Pima County residents and higher income households.