



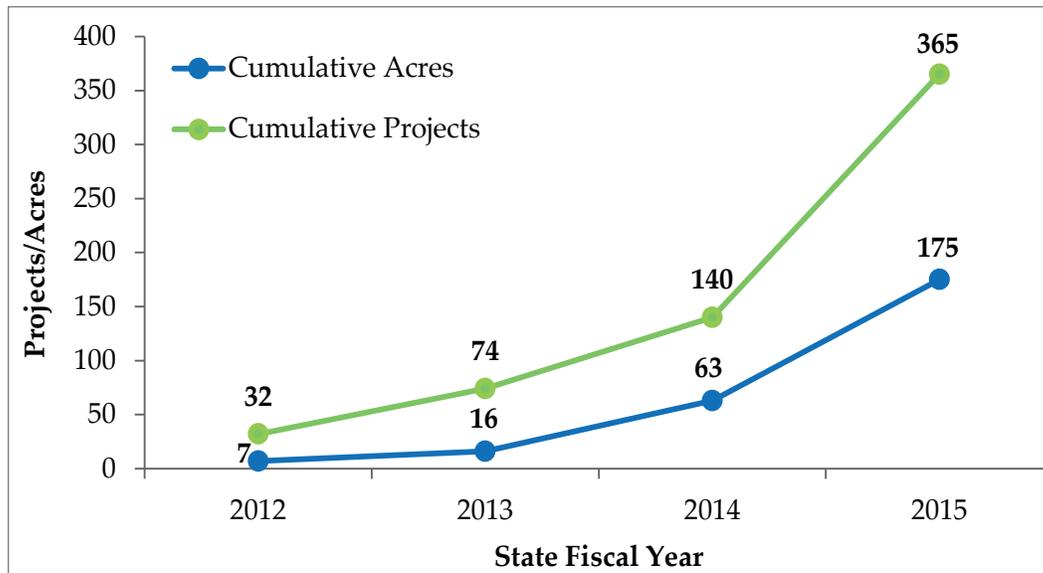
Clean Water

ENHANCE Surface Water Quality Through Best Management Practices

Improving ecological and hydrologic function throughout Vermont

PERFORMANCE TREND

Number of enhancement projects undertaken and resulting acres improved



DATA ANALYSIS

In efforts to enhance water quality, the Watershed Management Division (WSMD) uses a multi-pronged and comprehensive approach. This approach includes strategies to avoid, minimize, and manage impacts to Vermont's surface waters. Managing impacts is particularly important considering that watersheds, could easily become stressed or impaired as a result of cumulative and legacy impacts. In these watersheds, it is important to use best management practices and other means to enhance, or improve upon ecological and hydrologic functions, in an effort to improve water quality.

Enhancement projects include:

- Implementation of best management practices on lakeshore properties
- Riparian buffer plantings and in-stream improvements

- Flow protection and culvert enhancement projects
- Removal of invasive species from eight different wetland complexes
- Installation of green stormwater infrastructure practices such as rain gardens and bioretention

In 2015, WSMD facilitated or helped to fund 225 unique enhancement projects, collectively resulting in improvement to 112 acres. The results of some enhancement projects are measured in units other than acres, such as miles or linear feet, thereby making the restored acreage appear lower. These projects will be included in future reports. 2015 shows a significant jump in number of projects due to a large number of flow protection and culvert enhancement projects and an increase in the number of acres due to wetland buffer enhancement projects.

225

additional projects enhanced the function of 112 additional acres in 2015

NEXT STEPS

Enhancement projects are an important tool in WSMD's efforts to improve water quality throughout Vermont. When implemented and sited properly, they can have noteworthy results. To date, WSMD has relied heavily on its Tactical Basin Planning process and partner organizations to identify, develop, and implement projects. In the future, WSMD will continue along this track but also plans to increase its efforts by:

- Further engaging municipalities and other partners in this work
- Increasing the amount of funding available for project scoping and implementation
- Increasing the amount of technical assistance provided by WSMD staff
- Using Lean business process improvement tools to evaluate and advance project prioritization methodologies

WSMD is currently working on developing a data tracking system to better track enhancement projects and our overall progress on this performance measure.



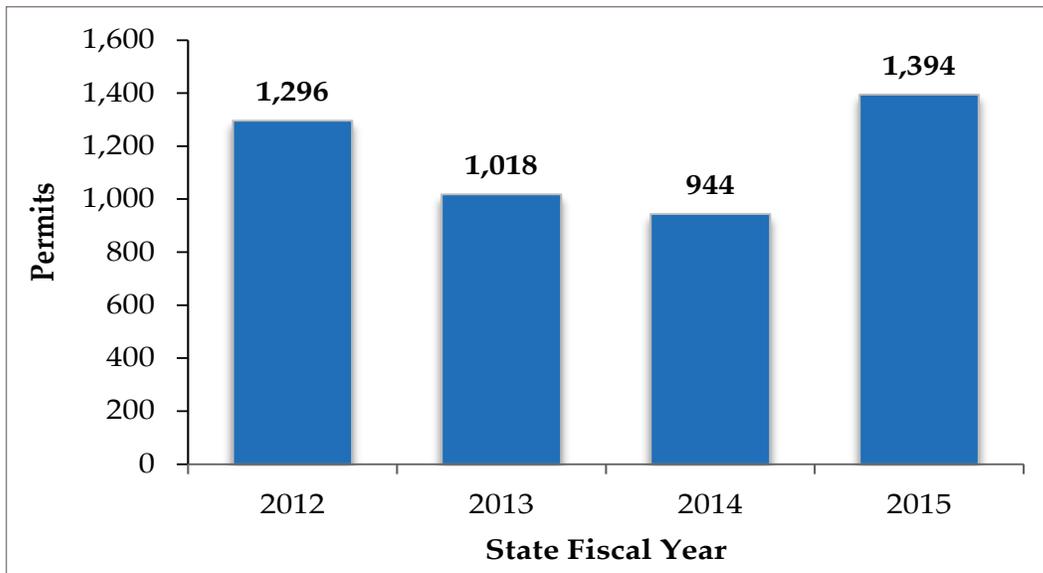
Clean Water

MAINTAIN Surface Water Quality Through Permitting

Permitting as a tool for maintaining water quality

PERFORMANCE TREND

Number of permits issued by year

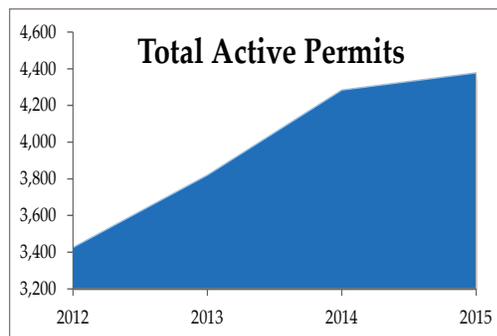


DATA ANALYSIS

WSMD requires permit coverage for a variety of activities which have a potential to impact water resources. The permit process is meant to avoid or minimize impacts to water quality. Permit coverage is required for aquatic nuisance control, lake and shoreland encroachments, stream alterations, construction and operational stormwater management, wastewater direct discharges, residuals management, and wetland encroachments.

The high number of permits issued in 2012 is a result of a renewal cycle for the Multi-Sector General Permit (stormwater) and additional authorizations provided after Tropical Storm Irene. The following two year downward trend reflects a return to normal permitting levels.

In 2015, WSMD issued 1,390+ new permits; a 48% increase from 2014. This increase is due to new regulatory permitting authority



for shorelands, flood hazard areas, and river corridors.

The number of active permits rose to 4,377 in 2015; a slight increase from 2014. Active permits remain in effect beyond the initial project or development and require ongoing evaluation and monitoring. The long-term nature of these permits and monitoring and compliance requirements enable us to ensure water quality is maintained.

1,390+ permits

issued and 4,300+ active permits managed in 2015

NEXT STEPS

WSMD has received additional regulatory authority as part of the Vermont Clean Water Act (Act 64) which will phase in over the next few years. To make sure that new regulatory processes are implemented properly, and that existing processes continue to maintain water quality at a high standard, WSMD proposes to:

- Engage a wide variety of stakeholders in the creation of new regulatory systems
- Utilize Lean business process tools to improve efficiency and permit processes
- Increase the number of staff resources dedicated to permit review and processing
- Develop an on-line permit application submittal system
- Review requirements associated with active permits and update as necessary
- Evaluate potential legislative changes needed to improve permit effectiveness

The processing and management of permits represents a large portion of WSMD's workload. Given expected permit increases in the coming years, finding ways to make the permit process more efficient and effective will be critical to adapting to this increase in workload and ensuring the health of Vermont's surface waters.



Clean Water

Finance Water Infrastructure Upgrades

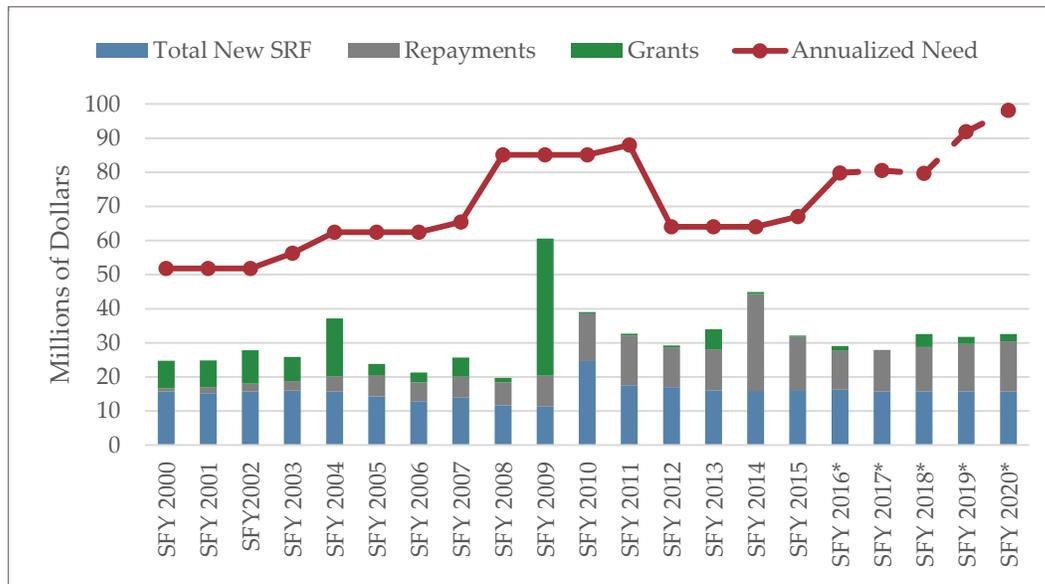
Providing low cost loans and grants to municipalities

\$83.4 million

current balance of available funds

PERFORMANCE TREND

Incoming water infrastructure loan and grant dollars compared to need



NEXT STEPS

1. Implementing checklists developed as part of the Lean process for construction inspection services provided by our program.
2. Drafted proposed legislation to:
 - Expand the eligibility of Clean Water State Revolving Fund loans to include additional project types and some privately owned facilities;
 - Modify the municipal pollution control priority system; and,
 - Modernize the pollution control grant system to better reflect today's water quality objectives.
3. Implementing a new computer system to replace legacy systems in an effort to enhance financial management and allow for auto generating routine correspondence.

DATA ANALYSIS

Available funding, including grants and state revolving fund loans, is forecasted to lag behind the annualized need for funds for public water infrastructure.

Grants available to municipalities for wastewater projects, have generally decreased over time as other demands for state funds have increased. Loans available through Drinking Water and Clean Water State Revolving Funds are forecasted to decrease due to anticipated decreases in federal funding. Repayments from existing loans are generally anticipated to increase over time due to the revolving nature of the fund, but lag when loans entering repayment slows.

Increasing demand for Drinking Water funding largely reflects evolving regulatory requirements and ageing water system infrastructure.

Increasing demand for Clean Water funding is anticipated due to the proposed/new TMDLs for Lake Champlain and Long Island Sound, stormwater regulations, the adoption of new standards for combined sewer overflows, and aging wastewater infrastructure.

The new onsite loan program has provided funding to repair 12 failed wastewater systems and 2 failed water systems. The cumulative loan awards for the Clean Water and Drinking Water SRF programs are \$265.6M and \$182.7M respectively, for cumulative total of \$448.3M. Additionally, the two programs have administered \$73M in grants for a grand total infrastructure investment of \$521.3M since the loan programs came into existence.

DATA SOURCE: State records on funds available, annual requests for funding and forecasted trends.

PREPARED BY: Facilities Engineering Division
<http://www.anr.state.vt.us/dec/fed/fed.htm>



Clean Air

Reduce Mobile Source Air Pollution

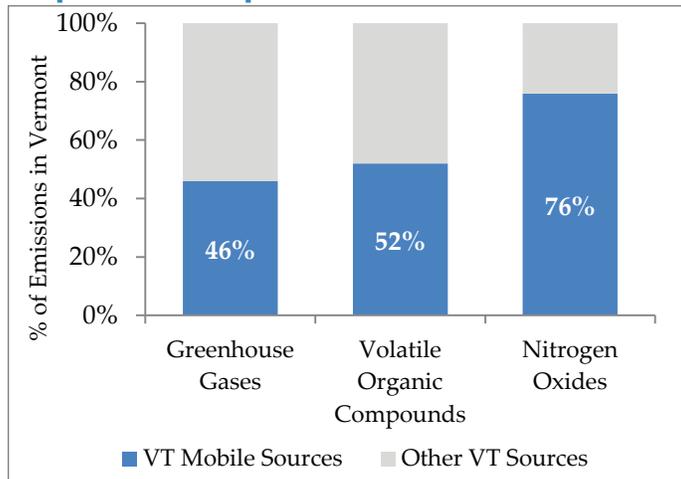
Increasing electric vehicles in Vermont will reduce air pollution emissions

76%

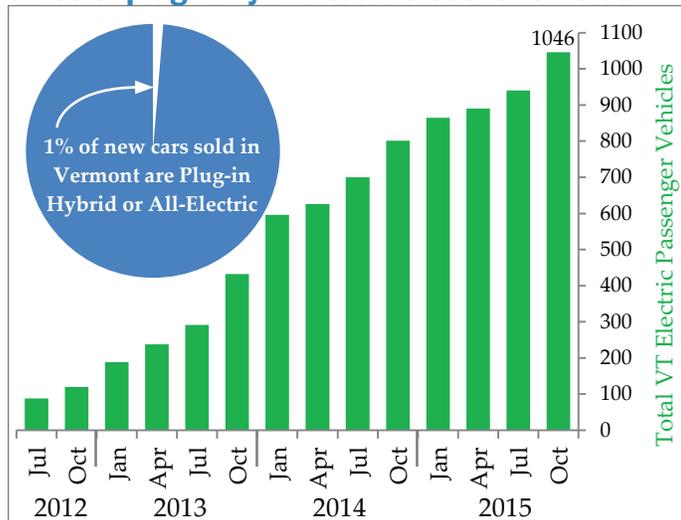
of NO_x emissions in Vermont are from mobile sources

PERFORMANCE TREND

Proportion of air pollutants from mobile sources



Sales of plug-in hybrid & all-electric vehicles



DATA ANALYSIS

In Vermont, mobile sources (i.e. vehicles, engines, and equipment) are the largest source of many air pollutants, including greenhouse gases and the ozone-forming volatile organic compounds (VOCs) and nitrogen oxides (NO_x).

Over the last thirty years, the number of cars and trucks registered in Vermont has increased by nearly 60%, while the number of vehicle miles traveled (VMT) each year in Vermont has nearly doubled.

Cleaner conventional

vehicles and alternatively fueled vehicles such as plug-in hybrid and all-electric vehicles are necessary to help offset increases in vehicle population and VMT.

While the continuous growth rate of new electric vehicles registered in Vermont is encouraging, these vehicles are still only a very small fraction of the total new vehicles registered. In order to improve air quality and meet our greenhouse gas emission reduction goals, plug-in hybrid and all-electric vehicles will need to be a much larger fraction of total new vehicles registered in Vermont.

At the same time, efforts to reduce air pollution from conventional vehicles must continue. These include continued adoption of California vehicle emissions standards, inspection and maintenance of vehicle emission control systems, and enhancement of emissions control technology upgrade programs for diesel engines.

NEXT STEPS

- Implement VT's Zero Emission Vehicle (ZEV) Action Plan which identifies actions to expand the ZEV market in VT, and continue to participate in Multi-State ZEV Action Plan.
- Continue adoption of California vehicle emissions standards, including ZEV requirements.
- Continue and enhance VT's vehicle emissions inspection and maintenance program to maximize benefits from investments in emissions control technology.
- Continue to reduce diesel emissions through technical support and funding for vehicle and equipment replacement, and installation of idling reduction technologies.
- Continue providing information and training to VT automotive technicians to ensure effective maintenance and repair of vehicle emission control systems.

DATA SOURCE: VT submission to US EPA 2011 National Emissions Inventory
VT Department of Motor Vehicles Motor Vehicle Registrations

PREPARED BY: Air Quality and Climate Division, (802) 828-1288



Healthy and Safe Communities

Promote the Sustainable Management of Waste

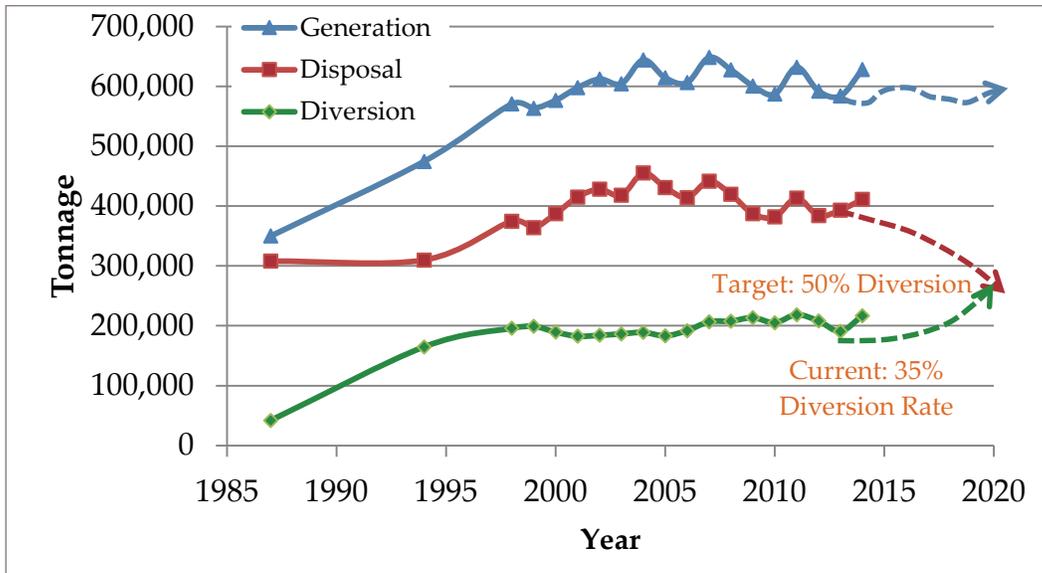
Increasing the statewide diversion rate of all solid waste generated by Vermonters

3.6 lbs

the amount of waste disposed of by an average Vermonter each day

PERFORMANCE TREND

Tons of solid waste generated, diverted and disposed of by Vermonters



NEXT STEPS

- Requiring the parallel collection of recyclables and organics at locations or by haulers that collect municipal solid waste (MSW)
- Encouraging the use of the Food Recovery Hierarchy
- Providing financial incentive to reduce waste by implementing a 'Pay as You Throw' pricing system for MSW
- Implementation of updated Solid Waste Implementation Plans by the State's various solid waste management entities
- Banning these materials from disposal in Vermont landfills:

1. *Recyclables*

-- as of July 2015

Results Coming Soon

2. *Leaf and Yard Debris*

-- by July 2016

3. *Food Scraps*

-- by July 2020

DATA ANALYSIS

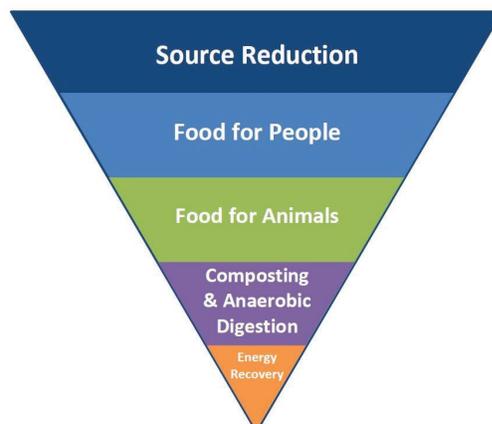
Solid waste generation has increased steadily in Vermont, parallel to national trends. The disposal of these materials results in the loss of reusable and recyclable materials along with lost opportunities to save energy, conserve resources, reduce greenhouse gases, and create business opportunities.

In 2013 Vermont began implementing the Universal Recycling Law, an innovative and encompassing change to the State's solid waste material management system. Largely focused on removing all recyclables and organics from disposal, Universal Recycling aims to make diversion convenient and available for all residents. It is estimated that these efforts can result in a diversion rate of 50% by 2020, an ambitious, but feasible goal.

Diversion, primarily recycling and composting, efforts in 2014 resulted in Vermonters diverting 35% of their waste away from landfill disposal, an increase of 2% over the 2013 diversion rate.

The generation of waste tends to follow economic growth and this is likely influencing the increases seen in generation and disposal of waste in 2014. Although a decrease in disposal is anticipated as Universal Recycling is implemented over the next five years, it is encouraging that despite an increase in waste generation, Vermonters have continued to divert waste from the landfills and slightly increased diversion rates in this last year.

Vermont Food Recovery Hierarchy



DATA SOURCE: Solid Waste Management Program

PREPARED BY: Waste Management and Prevention Division

(802) 828-1138



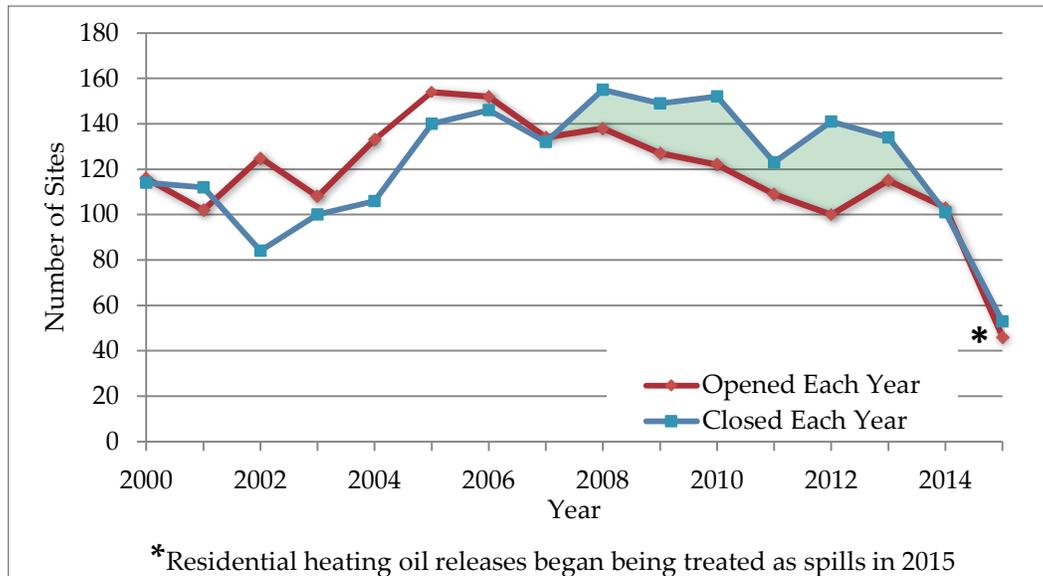
Healthy and Safe Communities

Transition Contaminated Sites Back to Productive and Beneficial Use

Facilitating efficient clean-up and closure processes for contaminated sites

PERFORMANCE TREND

Contaminated sites opened and closed (cleaned) each year



DATA ANALYSIS

There are many factors that contribute to successful remediation of contaminated sites including the extent and type of contamination, financial capability of the property owner, and degree of impact on the environment or human health. Our contribution to supporting successful clean-up of these properties includes providing technical and financial assistance for site assessment and supporting the implementation of clean-up remedies. It can also include assistance in pursuing redevelopment of difficult-to-clean sites, such as abandoned and vacant properties. In all cases, the ultimate end goal is to be protective while returning the impacted property to a productive and beneficial use.

In 2015, the Sites Management Section adjusted the procedures for handling residential heating oil releases. In the past, these releases have been a significant number of the new sites entered in to the program every year. Rather than process these releases as open hazardous waste sites, we have transitioned to managing them as spills. Residential heating oil releases often are small in scale and contained quickly. As a spill, emphasis can be placed on cleaning the site efficiently and limiting the scope of needed investigation. So, this transition better aligns the level of our administration and oversight with the scale of the problem and allows for more efficient use of limited available funds and staff time. This provides for increased management of older, pre-existing sites and increases the program's sustainability.

DATA SOURCE: Sites Management Section.

PREPARED BY: Waste Management and Prevention Division
(802) 828-1138

7

more sites were cleaned and removed from the hazardous sites list than were added in 2015

NEXT STEPS

- Working towards solutions to ensure the long term sustainability of the Environmental Contingency Fund (ECF)
- Utilize the ECF to support the clean-up of Vermont's most challenging contaminated sites and supports Vermont's participation in the federal Superfund and Brownfields programs.
- Continue to gain efficiencies through the Petroleum Cleanup Fund Reimbursement Fund 2014 Lean evening, including implementation of an online submission system
- Develop new strategies like this years change in management of residential heating oil releases to allow our hydrogeologists and engineers to better focus on technical aspects of site clean-up rather than claims processing.



Efficient and Effective Government

Improve Staff Performance Evaluations

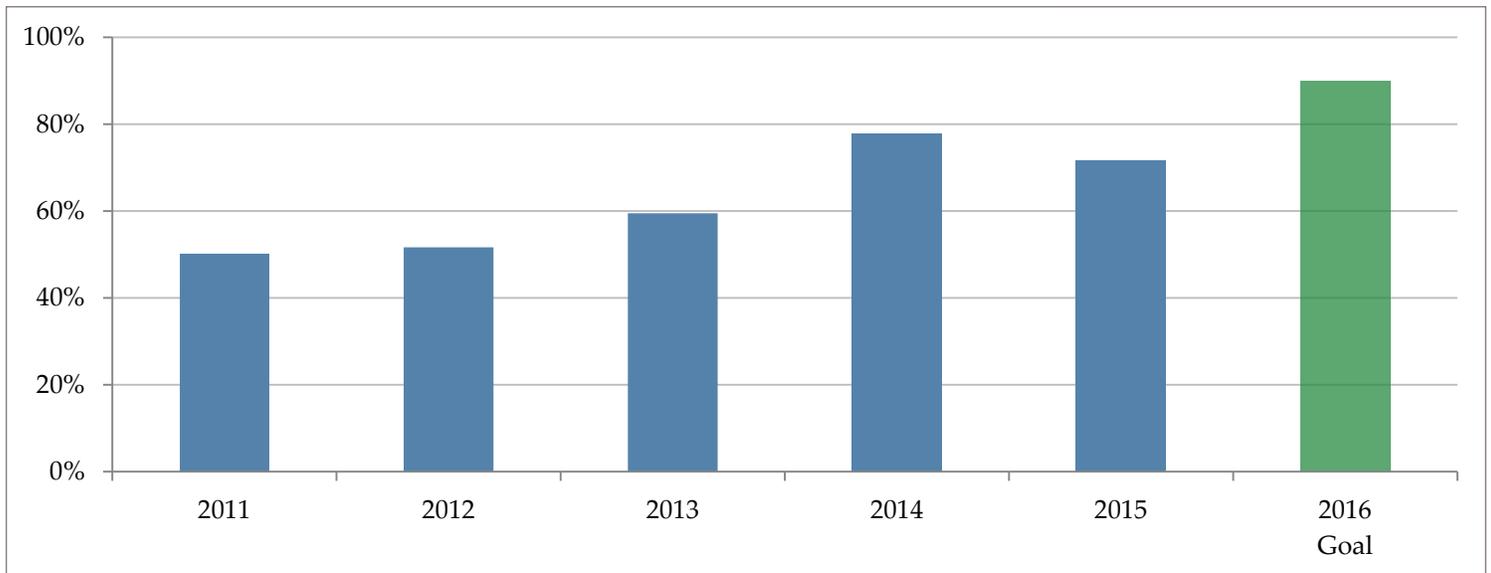
Completing evaluations on time and enhancing supervisor and staff communication

74%

of all performance evaluations were completed in 2015

PERFORMANCE TREND

Percent of staff performance evaluations completed



DATA ANALYSIS

Approximately 25% of Department of Environmental Conservation (DEC) staff are responsible for supervising other employees. Over the past several years, DEC has launched efforts to improve staff morale and job satisfaction. This includes increased communication between upper management and mid-level management, additional regular supervisor meetings, and an improved performance evaluation process.

In November 2013, DEC began using this new process, which includes regular quarterly performance meetings between employees and supervisors, a pre-evaluation survey completed by the employee and a thorough evaluation that clearly states what type of activities the employee can do to improve. In 2015, a staff survey was distributed to gain feedback on the new evaluation process. With 143 responses (approximately 45% of staff), the following information was gleaned:

- 80% of staff have been evaluated under the new system
- 56% of staff have participated in quarterly

performance meetings; 74% of supervisors find quarterly meetings very useful

- In general staff feel that their supervisors are accessible and giving timely feedback
- 45% of supervisors want to change something about the evaluation process
- 51% of supervisors do not feel that evaluations are improving performance

Under DEC's culture of continuous improvement, we will continue to improve this process with more emphasis on creating evaluations that lead to improved performance.

The number of performance evaluation completed has decreased slightly in 2015 partly due to difficulty in the tracking system and the number of new staff and supervisors requiring training on the performance evaluation system. Also, DEC experienced a significant amount of turnover, on average a total of ~21 positions were vacant at all times throughout 2015. In addition, DEC also had 14 positions which took advantage of the retirement incentive offered in September 2015 none of which have been authorized to be refilled.

NEXT STEPS

- Continue tri-annual meetings for all DEC supervisors
- Provide ongoing training on the performance evaluation system
- See feedback and continue to improve performance evaluation process
- Evaluate the Agency's career ladders for technical staff
- Develop an updated hiring and recruiting manual for hiring managers
- Add performance evaluation guidance to the Department's internal website.

DATA SOURCE: ANR Human Resource Database

PREPARED BY: Administration and Innovation Division
(802) 828-1556

Efficient and Effective Government

Improve Business Practices to Gain Efficiencies

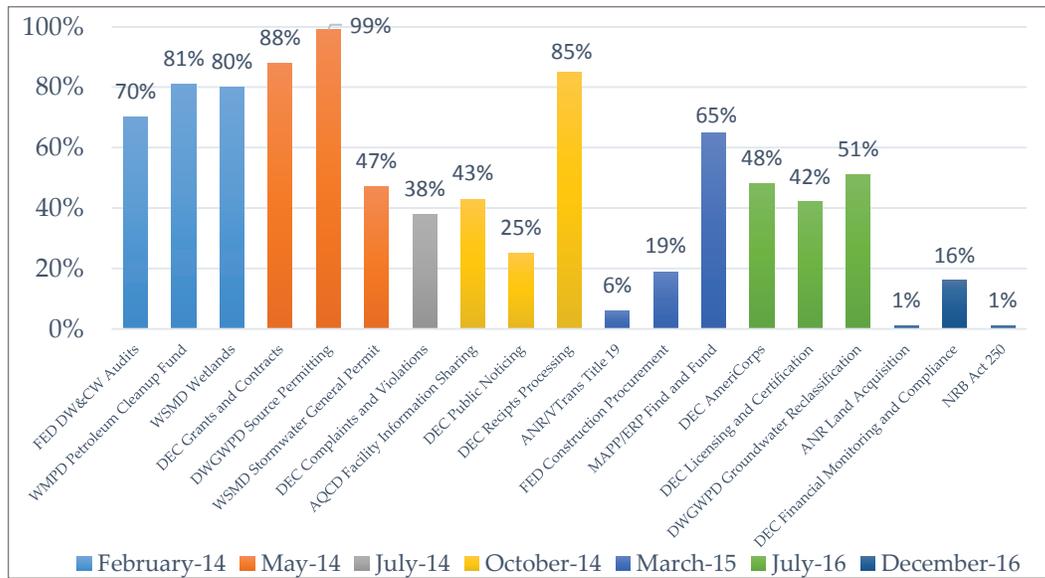
Developing a culture of continuous improvement through Lean

19+

Lean projects in active implementation since 2013

PERFORMANCE TREND

Lean projects initiated and measurement of implementation progress



NEXT STEPS

- Grow the range and variety of Lean events undertaken and tools used, specifically the A3 and Skills Matrix.
- Develop a list of strategic priority processes to Lean at the Division and Department level.
- Maintain focus on project implementation by holding staff accountable for implementation progress.
- Close out first round of 2014 Lean projects.
- Train more staff in both basic and more advanced Lean methods.
- Help to spread Lean to other state agencies by continuing to share our trainings, soliciting participation in our internal Lean events, holding cross-agency events, and developing an external website.

DATA ANALYSIS

The Vermont Department of Environmental Conservation (DEC) adopted Lean in 2013 in an effort to better serve the Vermont public through more efficient, timely and transparent processes. Lean is a term used to describe a management philosophy and set of practices developed by Toyota that helps organizations improve the speed, transparency and quality of processes while minimizing cost and protecting the environment.

All told, over 50% of DEC's 300 staff members have participated in Lean activities since the inception of the initiative with 56 of those staff receiving formal training (nearly 18% of staff). Including participation from other Agencies and stakeholder groups, over 251 people have received firsthand exposure to Lean.

The application of Lean at DEC has resulted in the a number of tangible process improvements, including but not limited to:

In 2015, DEC applied Lean methodologies, through a week-long "Kaizen" model, to nine distinct processes, including but not limited to financial monitoring and compliance, groundwater reclassification, and licensing and certification. Counting the ten projects initiated in 2014, DEC now has 19 Lean projects in varying stages of implementation, three of which involved sister agencies/departments. This does not include the variety of smaller, narrowly focused "mini-Kaizen" events (~10) that occurred over the past two years.

- 76% reduction in the State Revolving Fund audit backlog.
- 40% decrease in the average days from date of invoice to payment for grants and contracts.
- Evaluation and correction of public notice data errors for seven environmental programs.
- 62% increase in the number of claims paid within 30 days for the Petroleum Cleanup Fund.