Minnesota Department of Natural Resources

Fiscal Year 2015

Annual Report
on
Emergency Firefighting Expenditures

Minnesota's CL-215 water-scooping airtankers were sold after the 2014 fire season

Department of Natural Resources
Fiscal Year 2015 Report on Emergency Firefighting Expenditures

Executive Summary

Expenditures of state general funds for wildfire protection and emergency response by the Department of Natural Resources totaled $26,335,551 in Fiscal Year 2015 (FY15). This included a demand on the Emergency Firefighting Open Appropriation of $18,971,895.

Wildland fire activity for FY15 was average to slightly above average, with over 220 days with wildfire potential. The dry conditions in the fall and winter of 2014 continued into spring 2015. Over 75% of Minnesota was categorized as abnormally dry in November of 2014. With little overwinter precipitation, moderate drought developed in over 92% of Minnesota. Winter precipitation was 25% to 50% of the average and temperatures remained near the average for Minnesota.

DNR firefighters responded to 1,078 fires. Throughout the spring and into the summer of 2015, Red Flag Warnings occurred due to high winds, low relative humidity and dry standing fuels. The majority of Red Flag Warnings were issued in the west-central and southwest parts of the state; however, Warnings were issued in every forecast area in Minnesota during the fiscal year.

The two state-owned CL-215s (1,400 gallon, twin engine water-scooping airtankers) were sold in January of 2015. To replace the functionality of the CL-215s, the DNR utilized a mix of other aircraft including four FireBoss (800 gallon, single engine water-scooping) and two Single Engine Air Tankers (SEATs). The DNR does not own these FireBoss and SEAT aircraft, but rather contracts for them through a Minnesota vendor. These contracted aircraft were coordinated with other aircraft owned/operated by the Division and aircraft that are obtained through interagency and partnership agreements.

Efforts to reduce the number of arson fires in Minnesota continued. Activities included increasing the presence of firefighting resources in problem areas and improving detection of fire starts via aerial detection and the ForestWatch system. These efforts continue to show promise as the percentage of arson fires decreased again in FY15.

Minnesota exchanged mutual aid support with multiple states and federal and provincial partners during the FY15 wildfire season. These reciprocal working relationships continue to be a critical response resource and opportunity for reducing response costs.

File #2350

Department of Natural Resources
Annual Report on Emergency Fire Expenditures

Fiscal Year 2015

Purpose

The purpose of this report is to address the requirements of Minnesota Laws 2011, First Special Session chapter 2, article 1, section 4, subdivision 4, which states in part:

> "By January 15 of each year, the commissioner of natural resources shall submit a report to the chairs and ranking minority members of the house and senate committees and divisions having jurisdiction over environment and natural resources finance, identifying all firefighting costs incurred and reimbursements received in the prior fiscal year."

State Funding for Emergency Firefighting

Emergency Firefighting Direct Appropriation: Laws of 2014 appropriated $7,145,000 the first year and $7,145,000 the second year for prevention, presuppression, and suppression costs of emergency firefighting and other costs incurred under *Minnesota Statutes,* section 88.12.

Emergency Firefighting Open Appropriation: Laws of 2014 further state in part that "the amount necessary to pay for presuppression and suppression costs during the biennium is appropriated from the general fund."

Under the authority of the Open Appropriation during Fiscal Year 2015 (FY15), $18,971,895 was expended.

Attachment 1 *shows state firefighting expenditures broken down between salary and operating costs.*

Reimbursements to the General Fund

Payments and Collections: The Department of Natural Resources (DNR) receives payments for certain fire-related activities. These include payments for supplies sold to local government units (e.g., fire departments) from the Interagency Fire Cache (Cache Sales authorized under *Minnesota Statutes,* section 88.065) and collections from responsible parties for starting illegal or negligent fires (Fire Cost Collections authorized under *Minnesota Statutes,* section 88.75). These receipts are deposited directly to the General Fund and not used by the DNR.

In FY15, receipts came from the following sources:

- Cache Sales $112,098
- Fire Cost Collections $920,404

Special Revenue Fund: This is not a use of the state emergency fire appropriations, direct or open, but is included due to perennial interest. The DNR provides firefighters and aircraft to assist federal partners in-state, mobilizes firefighters for out-of-state assistance with national

wildfire emergencies, and assists Great Lakes Forest Fire Compact partners. These costs are initially charged to the Emergency Fire Special Revenue Fund. **During FY15 the DNR expended $2,106,290 of reimbursable costs for national mobilizations and Compact support.** The federal government reimburses federal costs and Compact partners (adjoining states and Canadian provinces) reimburse their costs as well.

The Special Revenue Fund may be reimbursed above actual costs from out-of-state deployments. The revenue is generated out-of-state mobilizations from equipment such as wildland fire engines and the previously owned CL-215s, and includes a portion of the fixed costs associated with this equipment. Fixed costs are paid from the emergency firefighting appropriation. Excess recovery revenue is periodically transferred to the General Fund, however, no transfer was made in FY15. The DNR sold its CL-215s in January of 2015. This has reduced the potential for excess recovery revenue going forward, as reflected in the FY15 figures.

Total Reimbursement to the General Fund in FY15 From All Sources

• Cache Sales	$ 112,098
• Fire Cost Collections	$ 920,404
• Special Revenue, Excess Recovery	$ 0
Total	**$1,032,502**

*Note: Beginning in FY13, certified fire protection costs for School Trust lands are no longer transferred to the General Fund. This change reflects a significant decrease in general-fund reimbursements shown for FY14 and subsequent years.

Fire Suppression and Presuppression

The success of the DNR's fire suppression strategy is largely due to aggressive initial attack. The goal is to keep fires small. Once a fire escapes initial attack, costs and damages increase exponentially.

Preparedness and suppression activities work together to reduce wildfire damages. Presuppression levels move on a continuum that is proportional to fire danger. Presuppression costs include activities undertaken in advance of fire occurrence to ensure more effective suppression. These activities include overall planning, recruitment and training of personnel, procurement of firefighting equipment and contracts, and maintenance of equipment and supplies. Suppression costs include activities that directly support and enable the DNR to suppress wildfires during times when fires are likely to occur, including the prepositioning of resources. As fire danger and fire occurrence increase, the resources that must be positioned for immediate response also increase. **Presuppression costs amounted to 34.3% of the direct and open fire appropriations in FY15.**

The DNR cost-coding structure provides accountability for fire expenditures. Costs are tracked by type of activity and location (to the administrative area level).

Attachment 2 *shows the percentages of fire expenditures allocated to prevention, presuppression, and suppression activities.*

Attachment 3 *shows the 10-year fire expenditure history.*

Planning and Readiness
Base costs for wildfire response are affected by general weather and precipitation patterns in addition to actual fire occurrence. A system for determining potential wildfire risks and establishing fire planning levels is used to guide the level of readiness week to week.

Attachment 4 *shows the criteria and planning levels currently in use.*

These planning level guidelines are reviewed and implemented at bi-weekly conference calls with fire managers from all agencies cooperating in Minnesota wildfire suppression efforts. The planning level, combined with daily fire danger indices, establishes the preparedness level needed to effectively respond to wildfires. Historically, about 80% of the state's wildfires occur during Planning Level III. Major fires also can and do occur at this level. FY15 had 222 days of possible wildfire danger, which is slightly above average. Of the possible fire days, 46 were at Planning Level III or IV. The state did not reach Planning Level V in FY15.

Fire Occurrence and Causes

General Activity
In FY15, 1,078 fires occurred that burned 23,997 acres. Historically, the state has experienced a 20-year average of 1,290 fires burning about 33,250 acres per fiscal year.

Number of Fires by Cause

	FY15	%	20-Year Average	%
Debris Burning	379	35%	465	36%
Incendiary/Arson	182	17%	380	29%
Equipment Use	139	13%	128	10%
Campfires	65	6%	50	4%
Railroad	23	2%	56	4%
Smoking	23	2%	35	3%
Lightning	13	1%	21	2%
Miscellaneous/Unknown*	254	24%	156	12%
Total	1,078	100%	1,291	100%

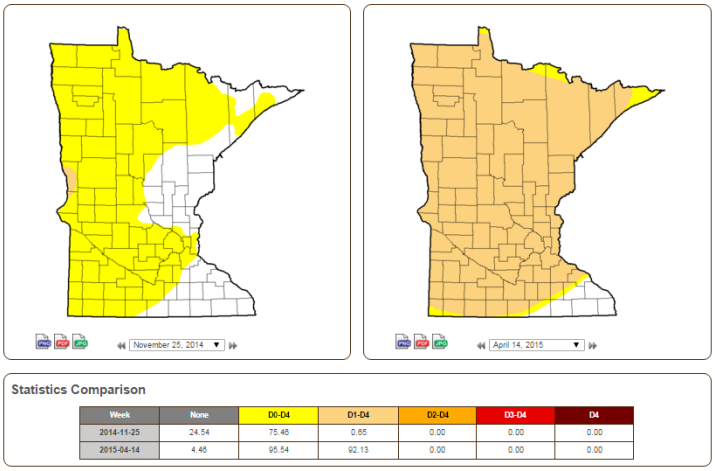
* Miscellaneous fires include electric fences, fireworks, power lines, escaped prescribed fires, structures and other (including undetermined cause)

FY15 showed a continued drop in the percentage of arson fires. The above average number of miscellaneous fires is due to an increase in several of the less common fire causes, most notably there were 66 power line fires in FY15; associated with wind events.

Attachments 5a and 5b *illustrate fire history and causes.*

Fire Behavior and Climatology

Wildland fire activity during the spring was average to slightly above average. Winter precipitation was quite light and Minnesota started the spring with dry to drought conditions. The snow cover that was present, melted rapidly in the non-forested parts of the state with the Arrowhead region holding snow cover longer than the southern and western portions of the state.



Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2014-11-25	24.54	75.46	0.65	0.00	0.00	0.00
2015-04-14	4.46	95.54	92.13	0.00	0.00	0.00

Dry conditions in the fall and winter of 2014 continued into the spring of 2015. Over 75% of Minnesota was categorized as abnormally dry in November 2014. With little overwinter precipitation, conditions developed into moderate drought in over 92% of Minnesota and over 95% of the state was categorized as abnormally dry. The winter precipitation was 25% to 50% of average and temperatures remained near normal.

By April 15th, deep soil drying was evident with the start of the Palsburg Fire. Located off the Thompson Road, south of Warroad and east of Upper Red Lake, the fire burned over 4,500 acres of commercial timberlands. Throughout the spring and into the summer of 2015, Red Flag Warnings continued to occur due to high winds, low relative humidities and dry standing fuels. The majority of Red Flag Warnings were issued in the west-central and southwest parts of the state; however, warnings were issued in every forecast area in Minnesota sometime during the fiscal year.

Dry to drought conditions continued through the spring with timely rains starting at the end of May. The rain events continued in June and July to end any drought in the state by the first week in July.

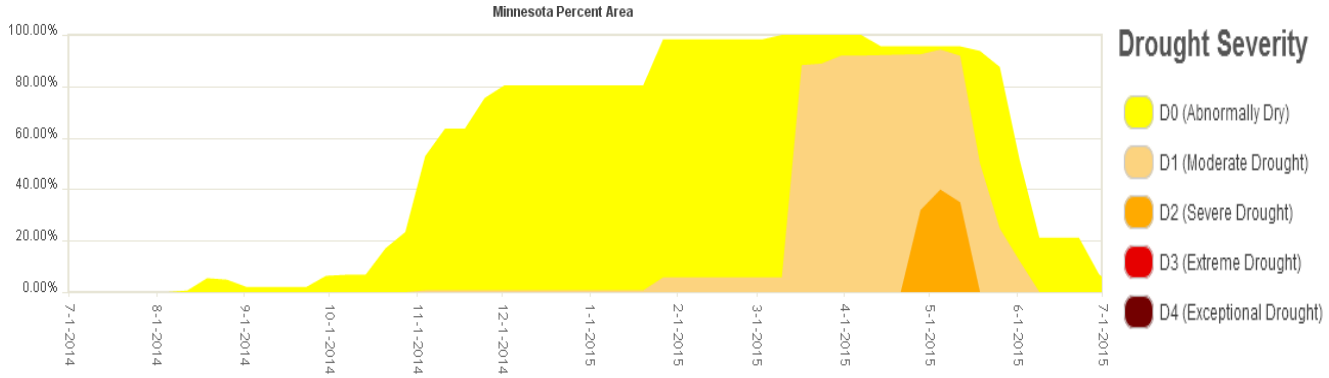


Image courtesy of FTS, Inc.

To improve fire weather forecasting and preparedness, several Remote Automatic Weather Stations (RAWS) received modification to the new Tri-leg format. This allows for easier maintenance and location changes if necessary. There are still 37 RAWS in Minnesota used for fire danger predictions and monitoring.

Cooperative Fire Response

This summer brought one of the most intense fire seasons on record to the western United States. Nationally there was a critical shortage of resources to fight the fires. The DNR and other Minnesota Incident Command System (MNICS) agencies responded by mobilizing crews and overhead personnel to other portions of the country and Canada. These requests are supported through mutual aid agreements.

In addition to aiding in firefighting efforts, the assistance to our partner states and agencies also provides valuable training for Minnesota state personnel. The DNR sent 224 regular agency state employees and 113 casual firefighters to aid in the firefighting effort. They primarily worked on fires in Alaska, Washington, California, Colorado, Idaho, Montana, Nevada, Oregon, Texas and Wisconsin. In addition, the DNR sent 29 Firefighters and one pilot to assist with firefighting efforts in Manitoba.

Note: Out-of-state firefighting assistance to other jurisdictions is reimbursed to Minnesota by the receiving partner agencies.

Interagency Fire Crew

Interagency All-Hazard Response
In early July 2015, a major windstorm created extensive damage in the Brainerd Lakes region with downed trees and power lines. The storm left several resorts and campgrounds devastated. The Minnesota Interagency Fire Center (MIFC) supplied 17 individuals to assist with blowdown clean-up in the Pillsbury State Forest. Additional requests for assistance were not received.

The MN DNR has an agreement with the MN Department of Health to utilize MNICS Incident Management Teams (IMTs) to manage receiving and distribution sites should the Strategic National Stockpile (SNS) be activated. The Center for Disease Control maintains the SNS which consists of large quantities of medicine and medical supplies they will make available if there is a public health emergency (terrorist attack, flu outbreak, and earthquake) severe enough to cause local supplies to run out. This past year, the MNICS teams participated in a drill to test for preparedness and look for potential improvements. The drill was a success and several recommendations resulted to improve the IMT response in the event of activation.

In-state Wildfire Response
The 1,078 fires responded to by the DNR in FY15 burned 23,997 acres in Minnesota, approaching the 20-year average of 35,051 acres.

With the sale of the CL-215 firefighting aircraft after last season, the DNR began using a combination of other aircraft to meet the firefighting needs of Minnesota. The new mix of mostly contracted aircraft allowed efficient response throughout the state and appears as effective as the state-owned machines. The increased number of aircraft also allowed greater flexibility.

Efforts to reduce the number of arson fires in Minnesota continued. Activities included increasing the presence of firefighting resources in problem areas and improving detection of fire starts via aerial detection and the ForestWatch system. These efforts continue to show promise as the percentage of arson fires decreased again.

The DNR responded to numerous wildfires throughout the state. The new mix of aircraft, continued partnerships, and attention to wildfire preparedness helped keep the fires small and allowed most fires to be controlled within a 24-hour period.

FireBoss Aircraft Delivering Retardant

Firefighting Aircraft

The Division uses several types of aircraft to provide tactical aerial firefighting support and intelligence to ground firefighters. In FY15, the DNR responded with tactical firefighting aircraft to over 480 requests on more than 180 wildfires. The two state-owned CL-215s (1,400 gallon twin engine water-scooping airtankers) were sold in January 2015, after 14 years of quality service to the Division. In FY15, the DNR used a mix of aircraft procured under Exclusive Use and Call-When-Needed contracts, aircraft owned/operated by the Division and aircraft obtained through interagency and partnership agreements.

The Division operates two light, fixed-wing airplanes that are used for aerial supervision on fires, fire detection, transportation, logistical and administrative support and aerial photography. This includes a Cessna 310 owned by the Division and a Cessna 206 owned by the United States Forest Service (USFS) that is on loan to the State through the Federal Excess Property Program.

In FY15, the Division contracted for four FireBoss airtankers (800 gallon single engine water-scooping); two Single Engine Air Tankers (SEATs - same airframe as the FireBoss but are ground-based airtankers on wheels); eight helicopters with water buckets, three light airplanes used for aerial supervision and 15 light airplanes used for fire detection and tactical intelligence.

Interagency partnerships continued to be a key part of the Division's aerial firefighting program. The Red Lake Agency, with assistance from the Bureau of Indian Affairs (BIA) provided one FireBoss and one SEAT in Bemidji. The USFS) provided one helicopter and three float planes (Beavers) in Ely. The USFS also provided one CL-415 based in Grand Rapids, two large retardant airtankers that operated out of bases in Bemidji, Brainerd, Hibbing, and Ely and aerial supervision aircraft.

The Division also obtains firefighting aircraft when needed from a variety of other sources, including: helicopters from the MN Army National Guard (five Blackhawks with 660 gallon water buckets and two Chinooks with 2,000 gallon water buckets); two helicopters from the MN State Patrol; CL-215s and/or CL-415s and aerial supervision aircraft from the Provinces of Ontario and Manitoba; and additional airtankers and helicopters from Federal agencies that are on National contracts and are paid for by Federal partners.

Attachments

Attachment 1 – State Fire Expenditures by Object Category for Emergency Fire Appropriations

Attachment 2 – Percentage of State Fire Costs in Prevention, Presuppression, and Suppression

Attachment 3 – Ten-Year Expenditure History of State Firefighting Costs

Attachment 4 - Guideline for Statewide Planning Level Determination

Attachments 5a and 5b – Graphical Representation of Wildfire History and Causes

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Emergency Fire Direct and Open Appropriations
State Expenditures by Category
FY15

Direct Appropriation*		$7,363,656
Open Appropriation		$18,971,895
	Total	$26,335,551
Salary Costs	$11,806,083	
Operating Costs	$14,529,467	
Total**	$26,335,550	

* Includes $226,308 rollover from FY14

** Actual expenditures as of 11/23/2015.

Attachment 2

FY15
State Fire Cost Summary

By Type of Activity and Appropriation

	Emergency Firefighting Direct	Emergency Firefighting Open	Total Open and Direct Combined
Fire Prevention	5%	0%	**1.4%**
Fire Presuppression	56%	26%	**34.3%**
Fire Suppression	39%	74%	**64.3%**
Total	**100%**	**100%**	**100%**

Fire Prevention activities include public information and education, fire permitting, and operation of the Township Fire Warden system, plus advice and assistance to communities and homeowners to inform them about protecting their property in the event of a wildfire in their community (Firewise).
State Fire Prevention activities are supplemented by annual grants from the USDA Forest Service as follows:

- State Fire Assistance – approximately $600,000 (supports fire prevention and readiness).
- Volunteer Fire Assistance – approximately $300,000 (supports Rural Fire Department readiness).
- Cooperative Fire Assistance – approximately $300,000 (supports Firewise – Community Fire Protection activities).

Fire Presuppression includes activities undertaken in advance of fire occurrence to ensure more effective suppression. These activities include: overall planning, recruitment and training of personnel, procurement of firefighting equipment and contracts, and maintenance of equipment and supplies.

Fire Suppression includes direct action to suppress wildfires and other activities that directly support and enable the DNR to suppress wildfires during times when fires are likely to occur, including the prepositioning of firefighting resources.

Attachment 3: Ten-Year Expenditure History – State Firefighting Costs

Nominal Dollars By Source of Funds	FY 2006	FY 2007	FY 2008 (b)	FY 2009 (c)	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	10 Year Average
Emergency Fire-Direct	$7,084,432	$7,319,596	$6,938,928	$7,388,440	$7,109,695	$6,928,432	$7,066,975	$7,184,311	$6,918,792	$7,363,656	$7,130,326
Emergency Fire-Open	$8,424,271	$16,518,294	$12,221,642	$11,695,791	$13,873,176	$8,558,008	$17,303,580	$23,373,476	$15,008,912	$18,971,895	$14,594,905
Fire Activity Total	$15,508,703	$23,837,890	$19,160,570	$19,084,231	$20,982,871	$15,486,440	$24,370,555	$30,557,787	$21,927,704	$26,335,551	$21,725,230
Cost Recovery (a)	$2,090,598	$1,893,112	$3,636,908	$3,058,986	$3,007,734	$2,610,699	$1,523,872	$3,426,210	$602,622	$1,032,502	$2,288,324
Net Cost to General Fund	$13,418,105	$21,944,778	$15,523,662	$16,025,245	$17,975,137	$12,875,741	$22,846,683	$27,131,577	$21,325,082	$25,303,049	$16,906,601
Mobilization Fire Costs (d)	$3,997,899	$4,317,572	$2,442,486	$2,014,520	$2,125,711	$2,204,635	$4,913,097	$4,451,095	$1,806,396	$2,106,290	$2,827,341

(a)Fire Cache Sales, Fire Cost Collections, Permanent School Trust Fund - protection services reimbursement, excess recovery from Special Revenue Fund. Beginning in FY 02, Cost Recoveries were deposited to the general fund. In FY 10, School Trust Fund protection services were included retroactive to FY 2001. FY 2013 was the last year School Trust Funds were applied.

(b) $600,000 direct fire support that had been funded through the forest management account, moved to the emergency fire appropriation in FY 08

(c) $600,000 leave time (vacation, sick leave) attributable to fire activity that had been funded through the forest management account, moved to the emergency fire appropriation in FY 09.

(d) This is not a state Expenditure. Fire assistance to federal partners and other states that is reimbursed to the state. State CL-215 firefighting aircraft were sold in January 2015.

(a) Cost Recovery Breakout $ 1,032,502

Fire Cost Collections -	$ 920,404
Fire Cache Sales -	$ 112,098
Excess Recovery, Sp. Rev.	$ 0

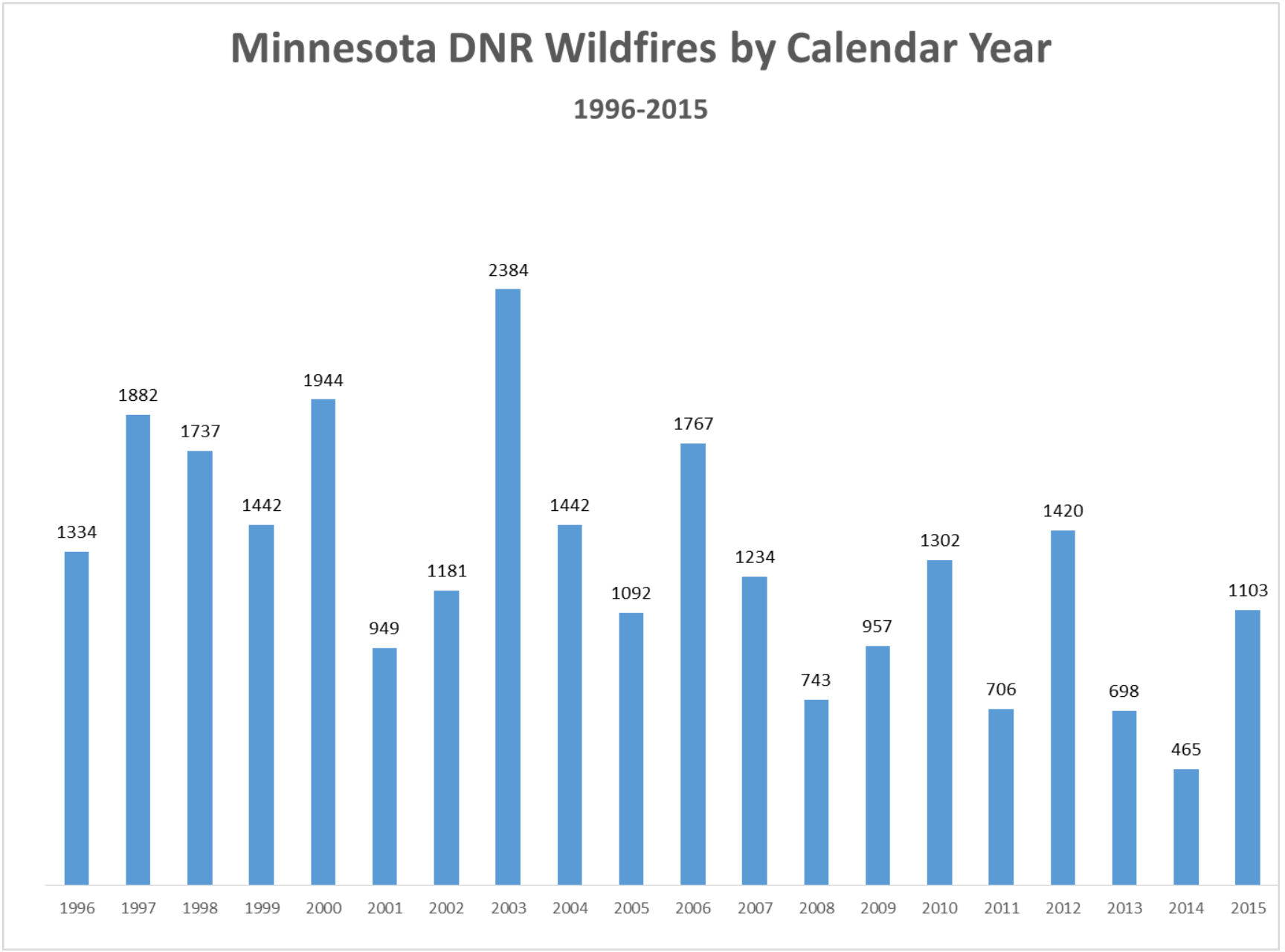
Note the major reduction in Cost recovery from previous years is due to School Trust Fund protection services no longer being included

ATTACHMENT 4 A GUIDELINE FOR STATEWIDE WILDFIRE PLANNING LEVEL DETERMININATION

	PLANNING LEVEL I	**PLANNING LEVEL II**	**PLANNING LEVEL III**	**PLANNING LEVEL IV**	**PLANNING LEVEL V**
BI (Q) spring, pre-green, floating 5 day average	Not applicable	0-45	46-70	71-95	96+
BUI (**after June 1**, floating 5 day average)	Not applicable	0-25	26-50	51-67	68+
ERC (Q) (alternate summer/fall indicator, after June 1, floating 5 day average)	Not applicable	0-15	16-29	30-36	37+
8-14 day Weather Forecast	Winter conditions, most of State snow covered, temps below freezing.	Normal conditions for season, adequate precip. expected	Less than normal precip. and RH, higher than normal temps forecast	Dry weather patterns persisting, no change forecast	Dry pattern intensifying. Unstable weather forecast leading to extreme fire behavior conditions.
MN Regional Planning Levels	All Regions/Agencies at P.L. I	One or more Regions/Agencies at P.L. II	Two or more Regions/Agencies at P.L. III	Two or more Regions/Agencies at P.L. IV	Two or more Regions/Agencies at P.L. V
Eastern Area Planning Level	I	I-II	I-III	I-IV	I-IV
National Planning Level	I-II	I-III	I-IV	I-V	I-V
Fire Occurrence (Initial Attack)	Rare, infrequent fire occurrence	Fires reported in scattered Areas. Generally less than 10 fires/day statewide.	Multiple Areas/Agencies reporting fires. 10 to 20 fires/day Statewide	Multiple Areas/Agencies reporting fires. 20 to 30 fires/day Statewide	Multiple Areas/Agencies reporting fires. 30+ fires/day statewide.
Fire Occurrence (Escaped fires)	None	None	1-2 fires requiring extended attack Statewide (with active fire)	3-5 fires requiring extended attack Statewide	5+ fires requiring extended attack Statewide
Sociopolitical Considerations	Statewide or Regional events such as fishing opener or the Fourth of July; natural events such as floods or windstorms; other unexpected or unusual events that may have large scale impacts should be considered.				
Resource Availability	Normal complement of personnel.	No shortages expected.	Moderate demand for some in-state resource types expected	Shortage of certain in-state resource types	Most in-state resources committed. Out-of-State assistance necessary.
In-State Mobilization	None	Less than 5% of statewide resources assigned out of home unit.	Some short term movement occurring, 5-10% of statewide resources assigned out of home unit.	10-20% of statewide resources assigned out of home unit.	20%+ of statewide resources assigned out of home unit.
Out-of-State Mobilization	If out-of-State mobilization is occurring or anticipated to occur, an 'A' designator will be applied at the current Planning Level.				

- Once Planning Level III has been reached in the spring, preparedness will not drop below that level until May 31 or later.
- Terms used above, which are calculated daily from weather and fuel measurements:
  - BI (Q) = **Burning Index**, fuel model Q: A measure of fire danger based on the probability of ignition and fire spread in a specified forest type.
  - BUI = **Build Up Index**: An indication of the dryness of larger sized woody fuels, which becomes a significant factor during a drought.
  - ERC (Q) = **Energy Release Component**, fuel model Q: A measure of the expected heat release from a fire, which will be experienced by firefighters on the fire line.

Attachment 5a



Attachment 5b