

Final report of ITS Center project: 511 Virginia Email Alert System

A Research Project Report

For the Center for ITS Implementation Research

A U.S. DOT University Transportation Center

511 VIRGINIA EMAIL ALERT SYSTEM

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Project Summary

511 Virginia is a statewide web and phone service that disseminates, amongst other things, traffic information on 96 roads throughout the state of Virginia. The service, which is sponsored by the Virginia Department of Transportation (VDOT), has been in operation statewide since February 2005. The Virginia Tech Transportation Institute (VTTI) has been involved with the development and operation of the service since its inception and currently serves as a data clearinghouse for 511. VTTI collects traffic and travel information from across the state, cleans the data in the VTTI operations center, and then sends the data to VDOT contractors who are in charge of disseminating it via phone and web to the traveling public.

As part of the 511 data clearinghouse, VTTI began operating an email alert system that distributes 511 alerts to the VDOT and its 511 contractors. The 511 alert service is one small piece of the overall 511 Virginia program. The purpose of this ITS Implementation Center project was to enhance the current email alert system in certain key respects so that it could be offered as a traveler information product to the traveling public.

The original "in-house" system relied on manual assignment of email address and road preferences (which road incidents would be reported, e.g. I-66, I-81), and assumed a computer-based email client was being used to receive the alerts. The new public system enhanced the original service in several ways. These enhancements included an automated online subscription system, the ability to customize which sections of a particular road were of interest, and the ability to receive alerts formatted for the device that was receiving them.

Project Tasks

Over the course of this project several tasks were accomplished that enhanced the 511 Alert Service so that it could be offered to the traveling public. Each of these tasks is described briefly below:

- **Task 1: Online Subscription.** The new system allows any interested 511 customer to register multiple email addresses or the number for a text message service to receive 511 traffic alerts. Additionally, the customer is able to select the type(s) of alert(s) he or she wishes to receive (e.g. accidents, road conditions).
- **Task 2: Road Sections.** The new system allows the 511 customer to select the roads within a District for which he or she would like to receive alerts (e.g. Northern Virginia District vs. Richmond District).
- **Task 3: Device Formatting.** The new system allows the 511 customer to select the type of device that will be receiving the alerts. For example, customers may receive alerts via e-mail or as a text message.
- **Task 4: Operations.** Operations and maintenance of the system is being conducted by VTTI programming staff.

New 511 Alert Service

As a result of this project, the 511 alert service is no longer only an “in-house” service for VDOT and its contractors. The 511 alert service is now a free e-mail and text message service that disseminates traffic, construction, special events, fog, and wind information to the general public. Participants can sign up to receive either e-mails or text messages to their cell phones, or both (up to two addresses are allowed). The emails offer much more information than the text messages, since the latter are limited to 100 characters, whereas there is no limit on the e-mail length.

In order to receive only necessary or salient e-mails, participants can choose:

1. which roads, and which sections of those roads they receive alerts for,
2. what times they receive alerts.

The information that is typically disseminated relates to anything that is impeding traffic: lane closures, backups, bridge lifts, foggy or windy conditions, detours, special events that might create congestion, etc. When lane closures are due to construction, the 511 alerts specify the times and dates of the lane closures, and the nature of the work.

As much as possible, the 511 alerts follow the pattern of information dissemination described below:

Accidents Pattern:

- Accident: [Route], [direction], [mile-marker if applicable], about [X] miles [north, south, east, west] of [City or other landmark]. The [Right, Left, All lanes] is/are closed. Expect [X - when available] delays.

Construction Pattern:

- Construction: [Route], [direction], [mile-marker if applicable], about [X] miles [north, south, east, west] of [City or other landmark]. [Right, Left, All lanes] closed from [time] to [time] [date] to [date]. Expect [X - when available] delays.

Bridge Lift Pattern:

- Bridge Lift: - [Route] [direction], at the [name of bridge], near [mile marker], in [City or other landmark]. There is a bridge lift scheduled at [time] on [day of the week], [month day]. Expect delays.

Congestion Pattern:

- Congestion: [Route] [direction], from Exit [X] (Route [X]), to Exit [X] (Route [X]), near [town or city landmark]. Expect delays.

Fog and Wind Pattern:

- [Fog, Wind] Advisory: VDOT is reporting [fog, high winds] on [Route], [east and west, north and south], in the [location] area. Use caution.


Rest Area Pattern:

- Rest Area Closure: [Route], at mile marker [X], about [X] miles [east, west, north, south] of [City or other landmark]. The rest area is closed until further notice. Plan accordingly.

For each event, when there is new information, a new e-mail is sent out. Congestion events are particularly dynamic events, and sometimes, 15 to 20 update e-mails may go out for one congestion event.


Participants can sign up for the email alerts and/or text messages via the 511 public web page. They can change what they receive and when they receive it whenever they wish using the username and password that they set up when they enrolled. Figures 1 through 4 show the process by which participants can sign up for alerts.

Address <http://www.511virginia.org/> Go





Welcome to 511 Virginia

Traffic and Travel Info

 **Weather Warning:** (10:35 AM, 06/26/06). Affected Areas: Caroline County, Charles, Chesterfield County, Colonial Heights, Es

[Highway Report](#)
[Plan Trip](#)
[Travel Services](#)
[Email Alerts](#)
[Public Trans](#)
[Weather](#)
[Cameras](#)
[Events](#)
[Phone](#)
[Links](#)

Email Alerts

Traffic and Travel Info

E-Mail Alerts

Bristol Region
 Bland, Buchanan,
 Dickerson, Galax,
 Grayson, Lee,
 Norton, Russell,
 Scott, Smyth,
 Tazewell,
 Washington, Wise,
 Wythe

Culpeper Region
 Albemarle, Culpeper,
 Fauquier, Fluvana,
 Greene, Louisa,
 Madison, Orange,
 Rappahannock

Fredericksburg Region
 Caroline, Essex,
 Fredericksburg,
 Gloucester, King and
 Queen, King George,
 King William,
 Lancaster, Mathews,
 Middlesex

Manage 511 Email Account
 (Update Roads, Change Email Addresses, Delete Account)

To start using the My511Alerts service, create an account below.

If you already have an account, please enter your username and password.
 (e.g User Name: Vdot123, Password: 7-15 characters)

Log In

User Name:

Password:

☐ Remember me next time.

[Create Account](#)
[Recover Password](#)

My511Alerts is a FREE Email/Text Messaging - subscription service provided by VDOT that allows website visitors to sign up to receive email notification of the following:
 511 Traffic Alerts

Sign-in for current users

Sign-up for new users

Figure 1. Sign-up page for new users and sign-in for current users.

511
Traffic and Travel Info

Welcome to 511 Virginia

Weather Warning: (9:44 AM, 06/26/06). Affected Areas: Bath County [More...](#)

Highway Report | Plan Trip | Travel Services | **Email Alerts** | Public Trans | Weather | Cameras | Events

E-Mail Alerts

Bristol Region
Bland, Buchanan, Dickerson, Galax, Grayson, Lee, Norton, Russell, Scott, Smyth, Tazewell, Washington, Wise, Wythe

Culpeper Region
Albemarle, Culpeper, Fauquier, Fluvanna, Greene, Louisa, Madison, Orange, Rappahannock

Fredericksburg Region
Caroline, Essex, Fredericksburg, Gloucester, King and Queen, King George, King William, Lancaster, Mathews

Sign Up for Your New Account

User Name:

Password:

Confirm Password:

E-mail:

Security Question:

Security Answer:

Figure 2. Sign-up processing pages for new users.

511
Traffic and Travel Info

Welcome to 511 Virginia

Weather Watch: (11:18 AM, 06/26/06). Affected Areas: James City, Newport News/Hampton, York [More...](#)

Highway Report | Plan Trip | Travel Services | **Email Alerts** | Public Trans | Weather | Cameras | Events

E-Mail Alerts

Bristol Region
Bland, Buchanan, Dickerson, Galax, Grayson, Lee, Norton, Russell, Scott, Smyth

Complete

Your account has been successfully created.

Figure 3. Sign-up processing pages for new users.

After the account has been created, the new user receives a welcome message letting him or her know that a new 'My511Alerts' account has been created. The message confirms the creation of the account, thanks the user for signing up, and gives directions on how to manage the account.

Status	From	Subject	[Date]	[Time]
3K	511EmailAlerts	<input type="checkbox"/> Your My511Alerts account has been created!	6/26/2006	1:36 pm

Figure 4. Welcome Message.

Users are also told how to login and manage their accounts. The process is described in the box below:

To Login and Manage your account go to <http://511Virginia.org> and click the Email Alerts tab.

1.)To Manage your account:

- a.)Login
- b.)Select a range of times to receive email alerts
- c.)Select which Type of Incidents you would like to receive Email Alerts about
(You can select multiple Incident Types, just one Type or None)
- d.)Type in a valid email address for either an HTML email or TxtMsg
- e.)Check the roads in which you would like to receive alerts
- f.)Click "Save Roads" at the bottom of the page
- g.)To remove roads that you have checked, uncheck the roads you want to remove
- h.)Click "Save Roads" again

2.)To Change your password:

- a.)Login
- b.)Click the "Change Password" link at the top of the page, Username is already filled out
- c.)Type your current password
- d.)Type your new password
- e.)Confirm your new password

3.)To Recover your password:

- a.)Click Recover Password link on Login page
- b.)Type Username and "Submit"
- c.)Type Answer to Security Question
- d.)Email will be sent with the username and temporary password.
- e.)Use temporary password to Login and follow step (2) using temporary password as "Current Password"

4.)To Delete your account:

- a.)Login
- b.)Click the "Delete Account" link at the top of the page

Please keep this email for your records, as it contains important information that you may need should you ever encounter problems or forget your password.

This is a courtesy notice. No response is needed.

Thank you for using 511!

Once the user has created an account he or she may go into the 511 Alert system and designate when information will be received, the types of information that will be received (i.e., accidents, construction, weather), what roads the information will cover, and where the information will be sent (i.e., e-mail address or text message service). Figures 5 and 6 show this process.

511
Traffic and Travel Info

Welcome to 511 Virginia

Weather Warning: (10:38 AM, 06/26/06). Affected Areas: Lexington, Rockbridge County [More...](#)

[Highway Report](#) [Plan Trip](#) [Travel Services](#) [Email Alerts](#) [Public Trans](#) [Weather](#) [Cameras](#) [Events](#)

Email Alerts

511
Traffic and Travel Info

VDOT Virginia Department of Transportation

E-Mail Alerts

Bristol Region
Bland, Buchanan, Dickerson, Galax, Grayson, Lee, Norton, Russell, Scott, Smyth, Tazewell, Washington, Wise, Wythe

Culpeper Region
Albemarle, Culpeper, Fauquier, Fluvana, Greene, Louisa, Madison, Orange, Rappahannock

Fredericksburg Region
Caroline, Essex, Fredericksburg, Gloucester, King and Queen, King George, King William, Lancaster, Mathews,

Select Roads

[Change Password](#)
[Delete Account](#)

[Logout](#)

Select a Start and End time in which you would like to receive Alerts!
(e.g 24/7 Emails: 12:00am - 12:00am)

Start Time: 12:00 AM **End Time:** 12:00 AM

Select the Incident Types for which you would like to receive Email Alerts

Incident Types:

☒ Accidents ☒ Construction ☒ Weather

(e.g TxtMsg #: 5555555555@vtext.com) **Fees may apply!**

E-Mail Address 1: **Format:** ☒ HTML ☐ Text Msg

E-Mail Address 2: **Format:** ☐ HTML ☒ Text Msg

Select times to receive alerts

Select type of alert received

Insert e-mail address and/or cell phone pager

Figure 5. Alert Selection Page.

511
Traffic and Travel Info

Welcome to 511 Virginia

Weather Warning: (11:56 AM, 06/26/06). Affected Areas: Goochland County, Louisa County, Powhatan County

Highway Report | Plan Trip | Travel Services | **Email Alerts** | Public Trans | Weather | Cameras | Events

Email Alerts

Regions:

- Amelia, Brunswick, Charles City, Chesterfield, City of Richmond, Colonial Heights, Dinwiddie, Goochland, Hanover, Henrico, Hopewell, Lunenburg, Mecklenburg, New Kent, Nottoway, Petersburg, Powhatan, Prince George
- Salem Region**
Bedford, Botetourt, Carroll, City of Bedford, City of Radford, City of Roanoke, Craig, Floyd, Franklin, Giles, Henry, Martinsville, Montgomery, Patrick, Pulaski, Roanoke, Salem
- Staunton Region**
Alleghany, Augusta, Bath, Buena Vista, Clarke, Clifton Forge, Covington, Frederick, Harrisonburg, Highland, Loudoun, Loudwell, Madison, Manassas, Manassas Park, Massanutten, Shenandoah, Spotsylvania, Stafford, Warren, Winchester

Richmond

☒ VA 267 ☒ Fairfax County Parkway ☒ Prince William Parkway ☒ George Washington Parkway ☒ VA 28

☒ I-295 ☒ I-64 ☒ I-85 ☒ I-95 ☒ US 1 ☒ US 250 ☒ US 301 ☒ US 33 ☒ US 360 ☒ US 460 ☒ US 522 ☒ US 58 ☒ US 60 ☒ VA 5 ☒ VA 6 ☒ VA 10 ☒ VA 30 ☒ VA 33 ☒ VA 35 ☒ VA 46 ☒ VA 47 ☒ VA 76 ☒ VA 150 ☒ VA 195 ☒ VA 207 ☒ VA 249 ☒ VA 288 ☒ VA 895

Salem

☒ I-81 ☒ US 460 ☒ US 11 ☒ US 220 ☒ I-581 ☒ US 58 ☒ US 52 ☒ US 221 ☒ VA 8 ☒ VA 100 ☒ VA 112 ☒ VA 114 ☒ VA 115 ☒ VA 177 ☒ VA 232 ☒ VA 311 ☒ VA 419 ☒ Blue Ridge Parkway ☒ I-77 ☒ VA 18

Staunton

☒ VA 18 ☒ I-81 ☒ US 11 ☒ I-64 ☒ US 33 ☒ I-66 ☒ US 17 ☒ US 250 ☒ US 340 ☒ US 50 ☒ US 501 ☒ US 522 ☒ US 60 ☒ VA 7 ☒ VA 42 ☒ VA 55 ☒ Skyline Drive

Roads selection is broken down into seven regions/districts.

Once the desired road sections are selected and saved, e-mails should start going out to the customer.

Figure 6. Alert Selection Page.

System Usage

There are 905 unique users signed up for the 511 Alert Service. Email alerts are being sent to 901 email addresses and 136 text message addresses. Users may choose to have information sent to multiple email and text message addresses. Figure 7 shows the breakdown of how many users are receiving email alerts and how many are receiving text messages.

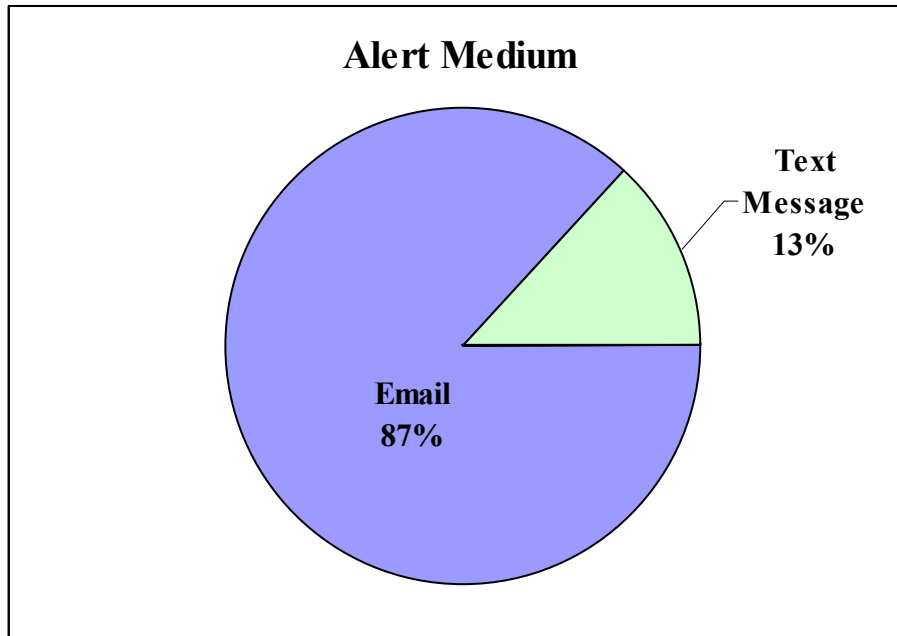


Figure 7. Alert Medium.

Accidents are by far the top type of information users choose when they sign up for the 511 Alerts System (Figure 8).

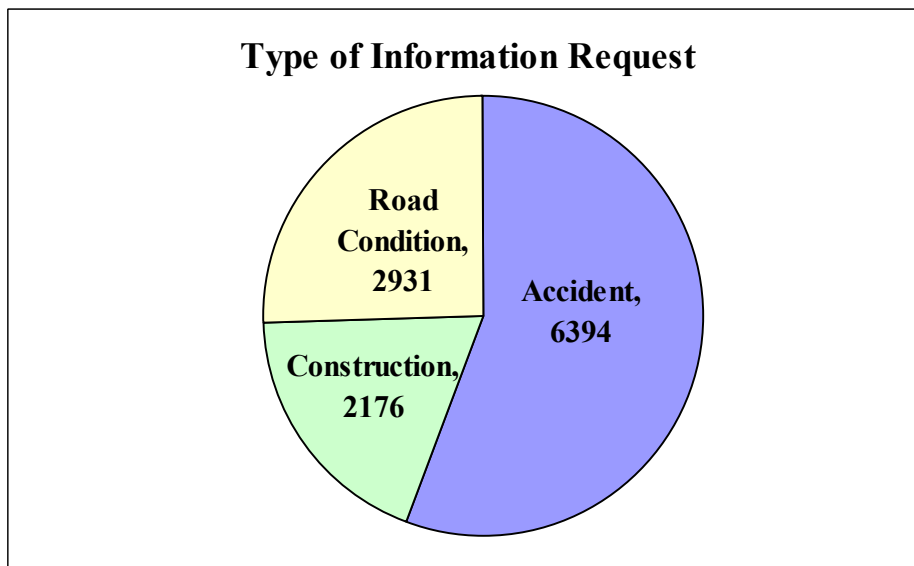


Figure 8. Type of Alert Request.

Customers may also select the District for which they want information. The most popular Districts can be seen in the graphic below (Figure 9).

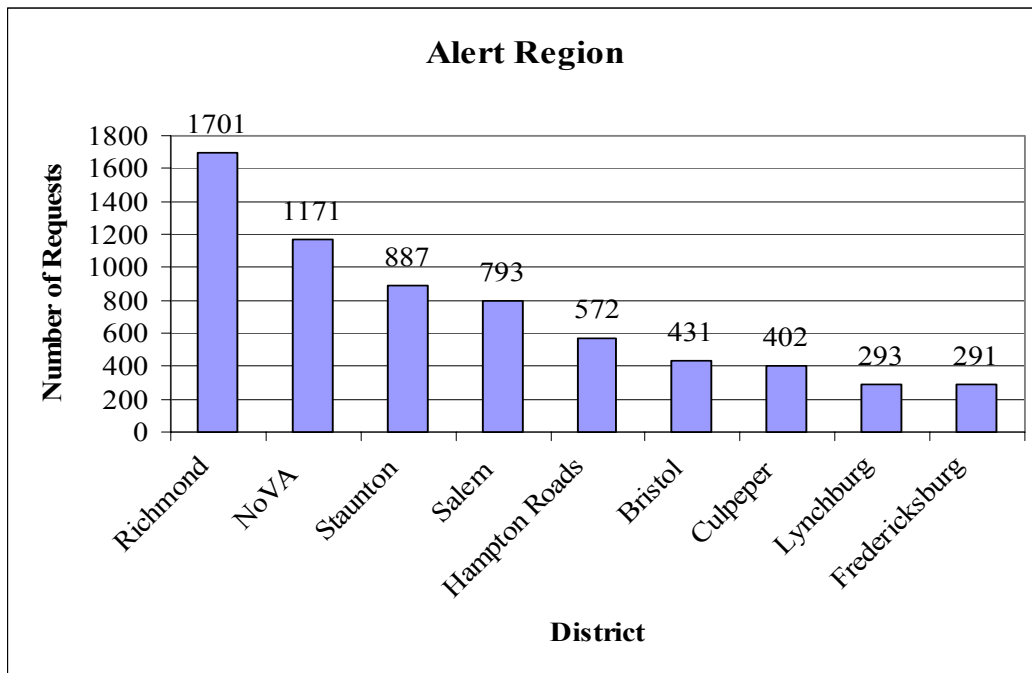


Figure 9. Alert Region.

Within Districts, customers can choose the roads for which they want alert information. From the data on what customers are choosing, I-64 and I-95 are the most popular roads for which customers want 511 information (Figure 10).

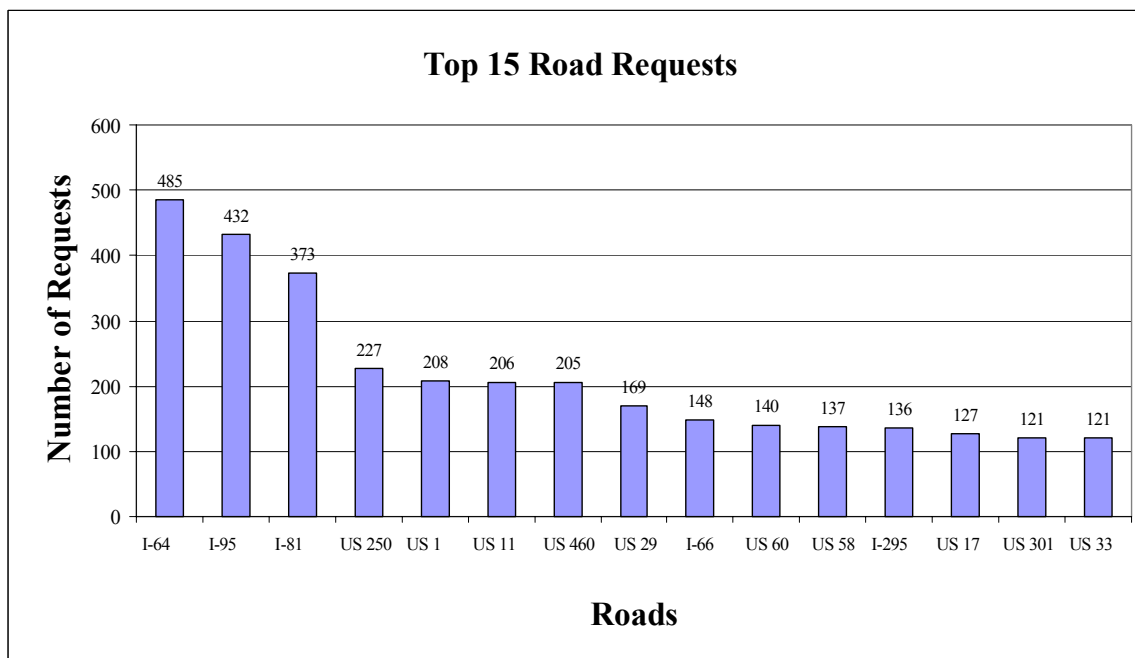


Figure 10. Top 15 Road Requests.

Finally, users can choose the time of day that they want to receive the alerts for the roads that they have chosen. The top 10 times of day to receive the alerts are shown in the graphic below (Figure 11).

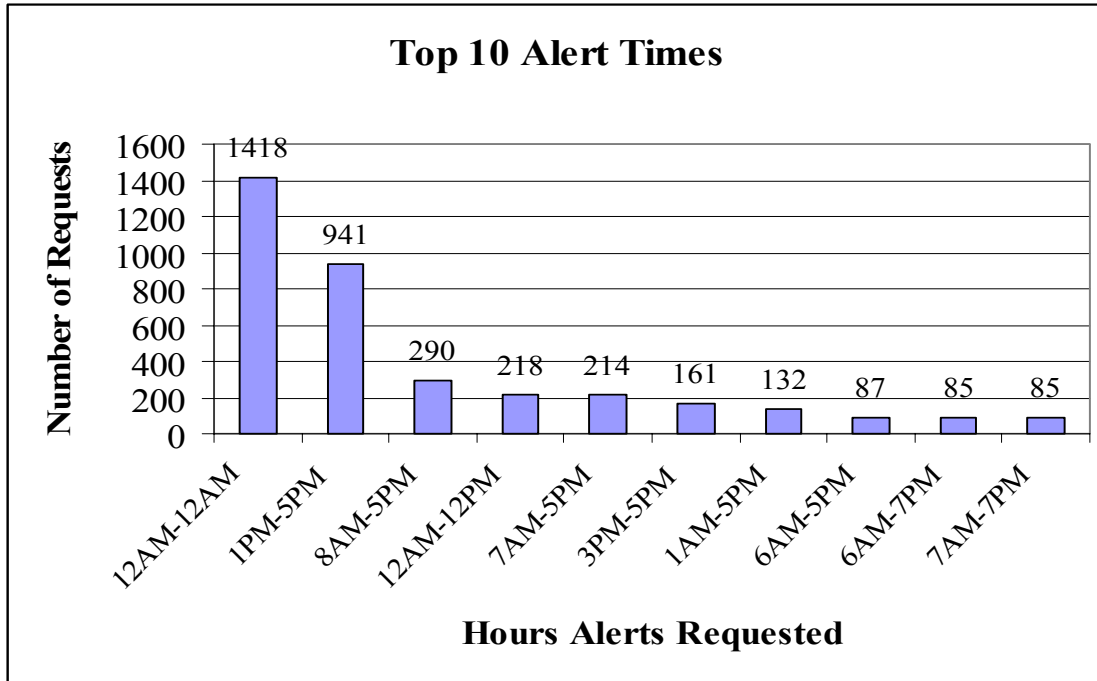


Figure 11. Top 10 Alert Times.

Conclusions

The motivation for this project was to provide users of 511 Virginia with information that was targeted to their specific needs and thus to make 511 Virginia a better product for the traveling public. The service was already being provided internally by VTTI to VDOT and its contractors, yet VTTI wanted to extend and enhance the service so that it could benefit the public. Nine-hundred and five unique users are signed up for the alert service and are receiving up-to-date travel-related information from across the state at various times during the day. It is the hope of the researchers at VTTI that this enhancement to 511 Virginia is in fact making 511 a better service for the traveling public and improving awareness of road conditions for those traveling in and through Virginia.