

Florida Department of Agriculture and Consumer Services

Emergency Service Function #11 – GIS and Web-based Damage Protection Tool

Florida Department of Agriculture and Consumer Services (FDACS) is one of the largest state agencies in Florida. The Emergency Service Function (ESF) #11 relates to Food and Water and is activated by DHS/FEMA upon notification of a potential or actual incident/disaster that requires a coordinated Federal response and support to help ensure one or more of the following: the availability and delivery of food products; food safety; appropriate response to an animal, plant disease, or pest; the protection of natural and cultural resources and historic properties; and/or the safety and well-being of household pets.

FDACS selected EPIC to evaluate their current ESF #11 projection tool and implement an automated solution to project the food, water, and ice needs during the disasters. EPIC conducted requirements analysis and validation meetings with FDACS leadership and stakeholders and developed the application design and architecture for review and approval by FDACS. Subsequent to obtaining the consensus, EPIC designed, developed and deployed a powerful yet easy-to-use Geographic Information Systems (GIS) and web-based ESF #11 Damage Protection tool that automates projection needs and generates reports with a few clicks.

> ESF #11 Damage Protection Tool Features

The ESF #11 Damage Protection tool meets critical business goals of the FDACS organization. The tool allows authorized users access to a customized user interface, which provides a fluid workflow to perform the following analytical functions:

- Create and/or manage designated disasters
- Create and/or manage scenario estimations for a given disaster
- Create and/or manage inventory of distributable goods (food, water, ice, etc.)
- Designate areas of concern (AOC) within proximity of a disaster on a interactive GIS-based map
- Assign demographic thresholds per AOC for population analytics
- Project immediate and future needs for food, water, and Ice within each AOC
- Track projected vs actual distribution/ consumption of food, water, and ice
- Provide export tables, worksheets, and a variety of custom reports
- A well formatted report can be shared with users and/or exported as a PDF

Client:

- > Florida Department of Agriculture and Consumer Services

Location:

- > Tallahassee, FL

Domain:

- > State and Local Governments

Services:

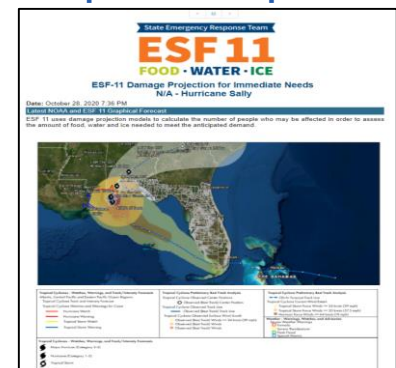
- > Web Application Development
- > Geographic Information Systems (GIS)
- > Systems Integration

Technologies:

- > Esri JS API and ArcGIS Online (AGOL) Feature Service
- > HTML5, CSS3, JS, jQuery, and Bootstrap
- > InstantAtlas Reports

URL: <https://esf11.fdacs.gov>

> Export/Print Reports



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> Workflow Automation

The ESF #11 Damage Protection Tool has a multi-step workflow UI, which provides a simplified user experience to functional mapping analysis. The ESF #11 Damage Protection Tool UI leverages pre-configured parameters enabling users to quickly create new evaluation scenarios. As users maintain the demographic threshold parameters appropriate for each disaster, they can focus on defining AOCs relative to real-time disaster updates. Another important time-saving feature is that immediate (Day 1) and multi-day needs are automatically calculated as the user updates each AOC. This workflow process enables disaster managers to quickly process updated scenarios and estimates so that responding agencies can mobilize necessary goods efficiently.

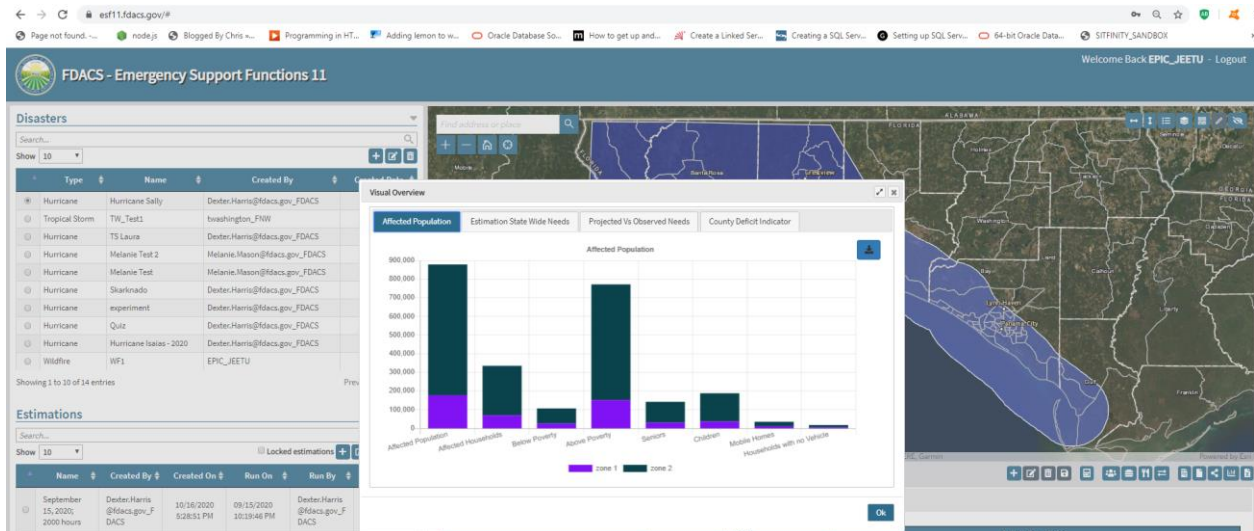
> Application Tools and UI

The ESF #11 Damage Protection Tool map and layer technology is architected with Esri JS API and an AGOL Hosted Feature Service. The UI Framework is built upon HTML5, CSS3, JS, jQuery, and Bootstrap. The application is designed to be flexible and responsive, but primarily web-based. Each dialog and table are dynamically responsive to user's custom parameter inputs and configuration options. Aside from the basic map interactive controls, the ESF #11 Damage Protection tool enables customized editing allowing users to draw/edit AOCs. Once an AOC is drawn and/or edited, demographic calculations are automatically processed, taking into account pre-configured thresholds, percentages, etc., returning value based inventory estimations for day-1 and projecting multi-day needs. Formatted reports are generated using InstantAtlas GIS reporting tool.

> Implementation

EPIC has successfully implemented the solution in 2020, and the FDACS successfully used ESF #11 Damage Protection tool in 2020 Hurricane season. By utilizing workflow analyses, automations, and reporting tools, FDACS has been able to more efficiently and effectively estimate and distribute critical goods to vulnerable communities in disaster impacted areas.

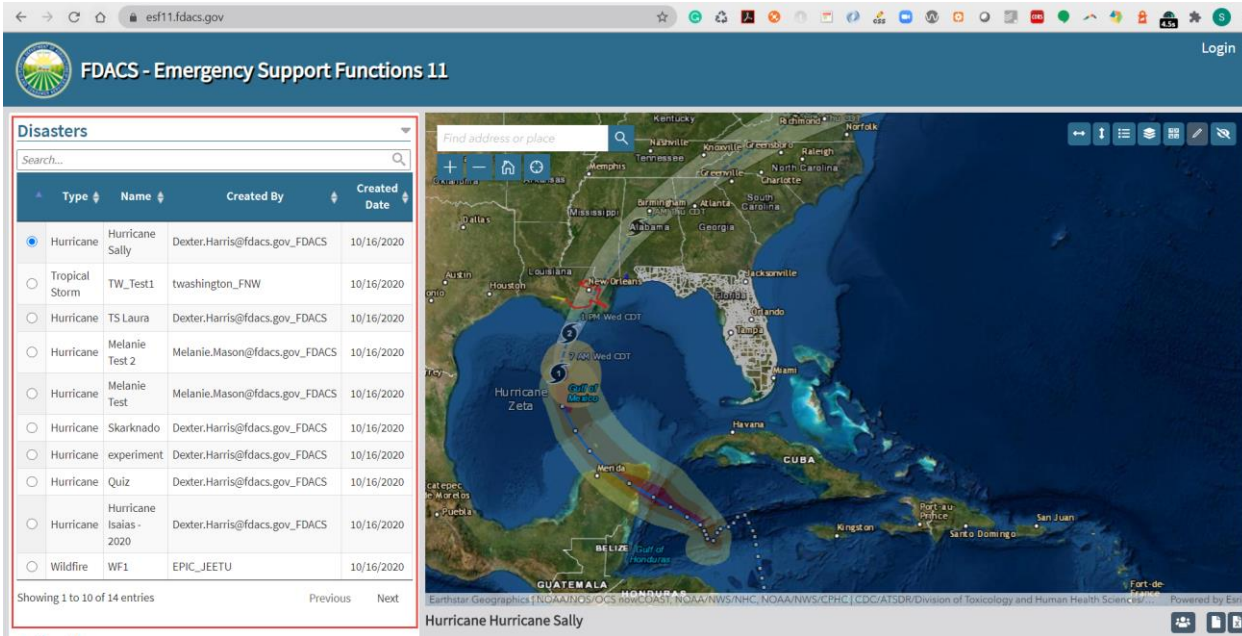
> Charts



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Emergency Service Function #11 – GIS and Web-based Damage Protection Tool

> Events Dashboard



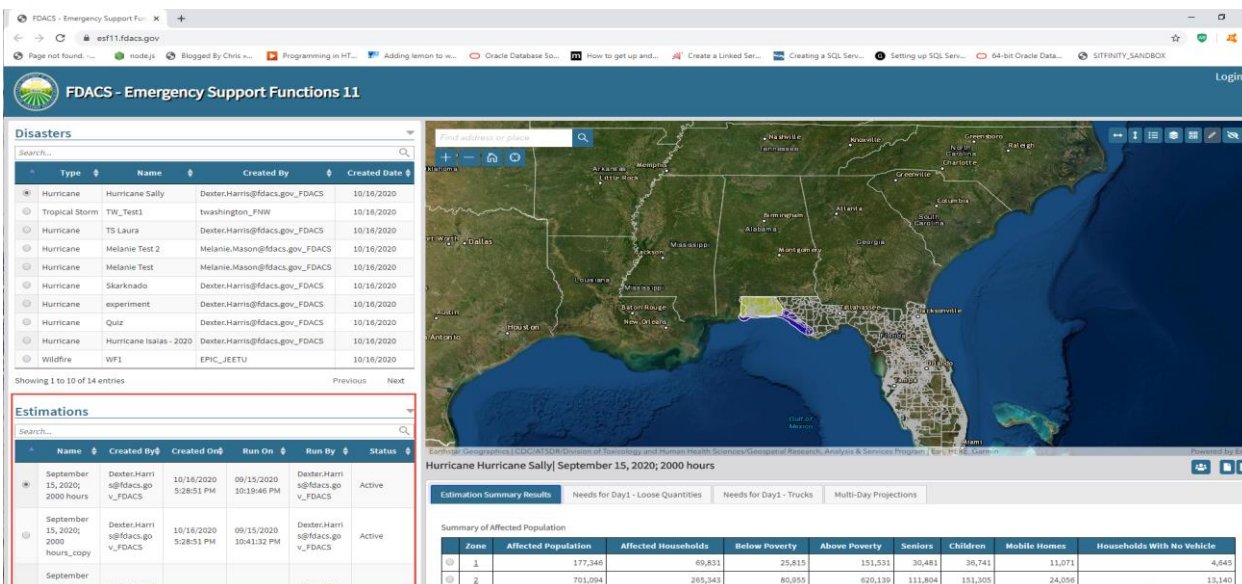
Disasters

Type	Name	Created By	Created Date
<input checked="" type="radio"/>	Hurricane Sally	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Tropical Storm TW_Test1	twashington_FNW	10/16/2020
<input type="radio"/>	Hurricane TS Laura	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane Melanie Test 2	Melanie.Mason@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane Melanie Test	Melanie.Mason@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane Skarknado	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane experiment	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane Quiz	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane Isaias - 2020	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Wildfire WF1	EPIC_JEETU	10/16/2020

Showing 1 to 10 of 14 entries

Hurricane Hurracane Sally

> Estimations



Disasters

Type	Name	Created By	Created Date
<input checked="" type="radio"/>	Hurricane Sally	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Tropical Storm TW_Test1	twashington_FNW	10/16/2020
<input type="radio"/>	Hurricane TS Laura	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane Melanie Test 2	Melanie.Mason@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane Melanie Test	Melanie.Mason@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane Skarknado	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane experiment	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane Quiz	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Hurricane Isaias - 2020	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
<input type="radio"/>	Wildfire WF1	EPIC_JEETU	10/16/2020

Showing 1 to 10 of 14 entries

Estimations

Name	Created By	Created On	Run On	Run By	Status
September 15, 2020; 2000 hours	Dexter.Harris@fdacs.gov_FDACs	10/16/2020 5:28:51 PM	09/15/2020 10:19:46 PM	Dexter.Harris@fdacs.gov_FDACs	Active
September 15, 2020; 2000 hours_copy	Dexter.Harris@fdacs.gov_FDACs	10/16/2020 5:28:51 PM	09/15/2020 10:41:32 PM	Dexter.Harris@fdacs.gov_FDACs	Active
September 16, 2020;	Dexter.Harris			Dexter.Harris	

Hurricane Hurracane Sally| September 15, 2020; 2000 hours

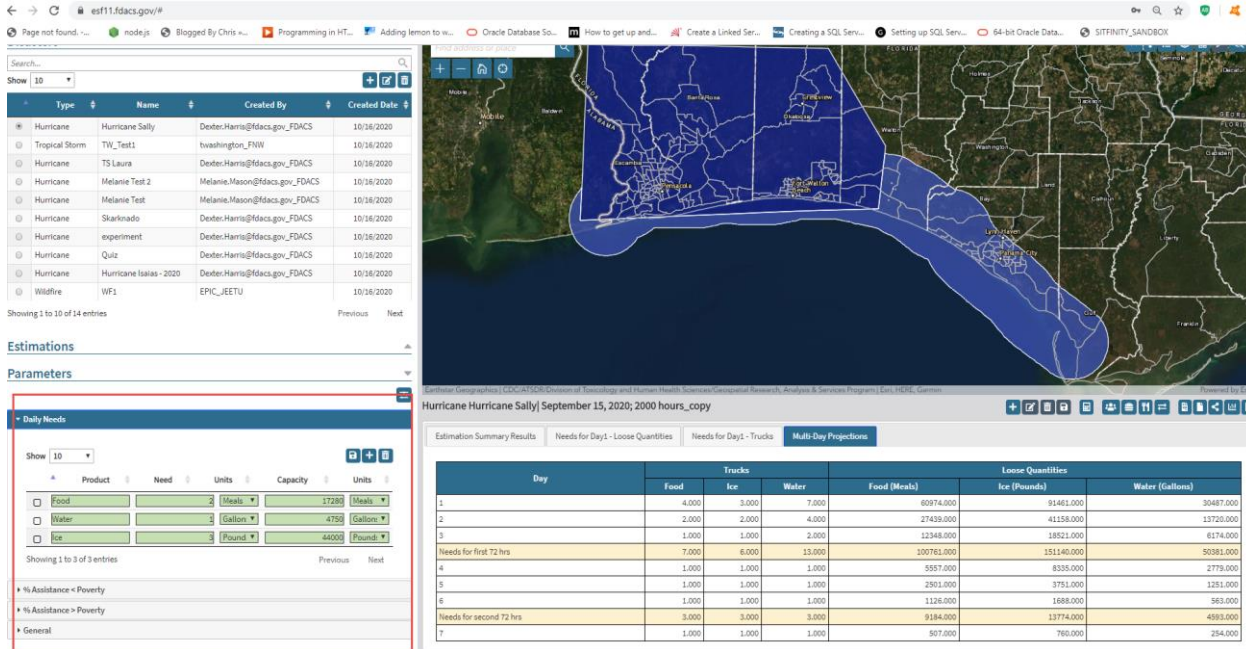
Estimation Summary Results

Zone	Affected Population	Affected Households	Below Poverty	Above Poverty	Seniors	Children	Mobile Homes	Households With No Vehicle
1	177,346	69,831	25,815	151,531	30,481	36,741	11,071	4,645
2	703,204	285,343	80,855	620,139	111,804	151,309	24,056	13,140

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Emergency Service Function #11 – GIS and Web-based Damage Protection Tool

> Parameters



Search... Show 10

Type	Name	Created By	Created Date
Hurricane	Hurricane Sally	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Tropical Storm	TW_Test1	twashington_FNW	10/16/2020
Hurricane	TS Laura	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	Melanie Test 2	Melanie.Mason@fdacs.gov_FDACs	10/16/2020
Hurricane	Melanie Test	Melanie.Mason@fdacs.gov_FDACs	10/16/2020
Hurricane	Skarnado	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	experiment	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	Quiz	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	Hurricane Isaias - 2020	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Wildfire	WF1	EPIC_JEETU	10/16/2020

Showing 1 to 10 of 14 entries

Estimations
Parameters

Daily Needs

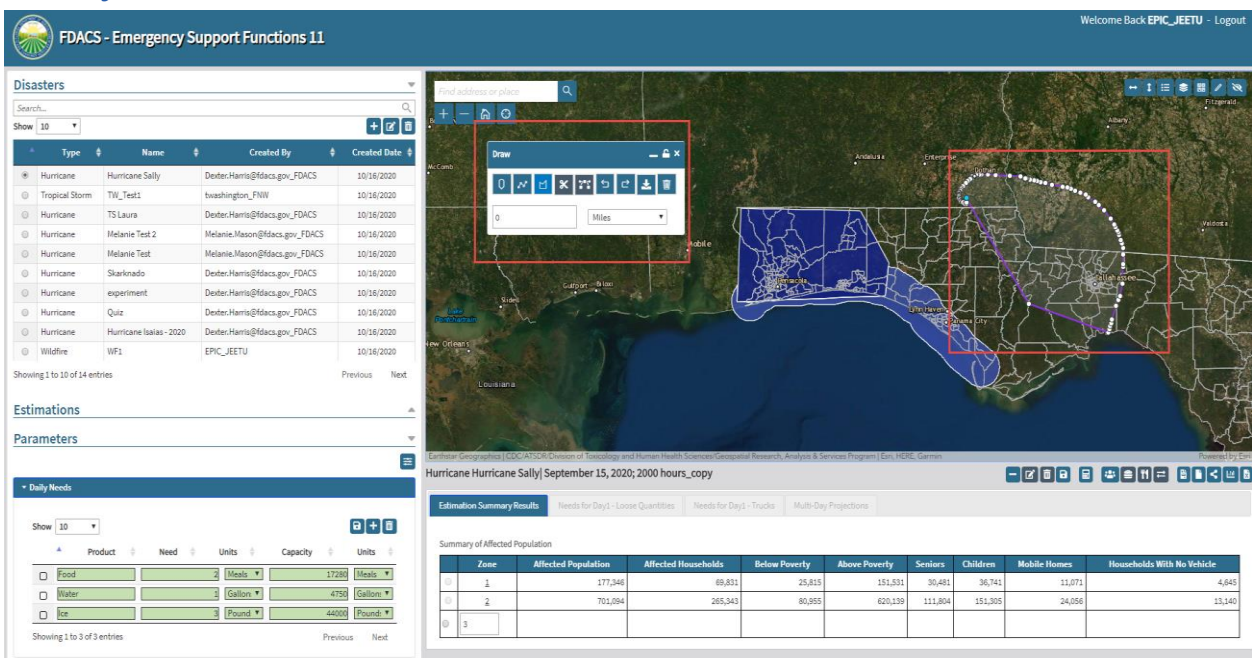
Product	Need	Units	Capacity	Units
Food	3	Meals	17280	Meals
Water	3	Gallon	4750	Gallon
Ice	3	Pound	44000	Pound

Showing 1 to 3 of 3 entries

Hurricane Sally September 15, 2020; 2000 hours_cop

Day	Tweaks			Loose Quantities		
	Food	Ice	Water	Food (Meats)	Ice (Pounds)	Water (Gallons)
1	4,000	3,000	7,000	8074,000	91461,000	30487,000
2	2,000	2,000	4,000	27459,000	41158,000	13720,000
3	1,000	1,000	2,000	12348,000	18821,000	6174,000
Needs for first 72 hrs	7,000	6,000	13,000	100761,000	151140,000	50381,000
4	1,000	1,000	1,000	5557,000	8335,000	2779,000
5	1,000	1,000	1,000	2951,000	3751,000	1251,000
6	1,000	1,000	1,000	1126,000	1468,000	563,000
Needs for second 72 hrs	3,000	3,000	3,000	9184,000	13774,000	4593,000
7	1,000	1,000	1,000	507,000	760,000	254,000

> Analysis and Draw Tools



FDACS - Emergency Support Functions 11

Disasters

Type	Name	Created By	Created Date
Hurricane	Hurricane Sally	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Tropical Storm	TW_Test1	twashington_FNW	10/16/2020
Hurricane	TS Laura	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	Melanie Test 2	Melanie.Mason@fdacs.gov_FDACs	10/16/2020
Hurricane	Melanie Test	Melanie.Mason@fdacs.gov_FDACs	10/16/2020
Hurricane	Skarnado	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	experiment	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	Quiz	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	Hurricane Isaias - 2020	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Wildfire	WF1	EPIC_JEETU	10/16/2020

Showing 1 to 10 of 14 entries

Estimations
Parameters

Daily Needs

Product	Need	Units	Capacity	Units
Food	3	Meals	17280	Meals
Water	3	Gallon	4750	Gallon
Ice	3	Pound	44000	Pound

Showing 1 to 3 of 3 entries

Hurricane Sally September 15, 2020; 2000 hours_cop

Summary of Affected Population

Zone	Affected Population	Affected Households	Below Poverty	Above Poverty	Seniors	Children	Mobile-Homes	Households With No Vehicle
1	177,346	69,831	25,815	151,531	90,481	36,741	11,071	4,645
2	705,094	285,343	90,955	620,139	111,804	151,895	24,056	13,140
3								

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> Projected Needs for Impacted Zones - Day 1

Disasters

Type	Name	Created By	Created Date
Hurricane	Hurricane Sally	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Tropical Storm	TW_Test1	bWASHINGTON_FNW	10/16/2020
Hurricane	TS Laura	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	Melanie Test 2	Melanie.Mason@fdacs.gov_FDACs	10/16/2020
Hurricane	Melanie Test	Melanie.Mason@fdacs.gov_FDACs	10/16/2020
Hurricane	Skarnnado	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	experiment	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	Quiz	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Hurricane	Hurricane Isaias - 2020	Dexter.Harris@fdacs.gov_FDACs	10/16/2020
Wildfire	WF1	EPIC_JEETU	10/16/2020

Estimations

Hurricane Sally September 15, 2020; 2000 hours_copy

Needs for Day 1 - Loose Quantities

Product	Zone 1	Zone 2
Food (Meals)	15670.000	45304.000
Ice (Pounds)	23505.000	67958.000
Water (Gallons)	7835.000	22852.000

> Projected Needs for Impacted Zones - Multi-Day

Parameters

Daily Needs

Product	Need	Units	Capacity	Units
Food	1728	Meals	1728	Meals
Water	4739	Gallons	4739	Gallons
Ice	44000	Pounds	44000	Pounds

Multi-Day Projections

Hurricane Sally September 15, 2020; 2000 hours_copy

Day	Trucks			Loose Quantities		
	Food	Ice	Water	Food (Meals)	Ice (Pounds)	Water (Gallons)
1	4,000	3,000	7,000	60974.000	93463.000	30487.000
2	2,000	2,000	4,000	27439.000	41158.000	13720.000
3	1,000	1,000	2,000	13348.000	18523.000	6174.000
Needs for first 72 hrs	7,000	6,000	13,000	100761.000	153140.000	50381.000
4	1,000	1,000	1,000	5557.000	8335.000	2779.000
5	1,000	1,000	1,000	2091.000	3191.000	1201.000
6	1,000	1,000	1,000	1128.000	1688.000	563.000
Needs for second 72 hrs	3,000	3,000	3,000	9284.000	13774.000	4593.000
7	1,000	1,000	1,000	607.000	760.000	234.000

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> Share Reports Feature

The screenshot displays the 'FDACS - Emergency Support Functions 11' web application. It features a 'Disasters' table with columns for Type, Name, Created By, and Created Date. Below it is an 'Estimations' table with columns for Name, Created By, Created On, Run On, Run By, and Status. A 'Share Report' dialog box is open, showing fields for From, To, Subject, and Body. The dialog body contains a message: 'Hello, Please find the report link(s) for ESF 11 Reports for Hurricane Hurricane Sally - September 15, 2020, 2000 hours_copy at ESF-11 Damage Projection for Immediate Needs ESF-11 Short-Term Damage Projection ESF-11 Damage Projection - County Level Data'. Below the dialog is a data table with columns for Day, Trucks (Food, Ice, Water), and Loose Quantities (Food (Meals), Ice (Pounds), Water (Gallons)).

Day	Trucks			Loose Quantities		
	Food	Ice	Water	Food (Meals)	Ice (Pounds)	Water (Gallons)
1	4,000	3,000	7,000	60974.000	91461.000	30487.000
2	2,000	2,000	4,000	27439.000	41158.000	13720.000
3	1,000	1,000	2,000	12348.000	18521.000	6174.000
Needs for first 72 hrs	7,000	6,000	13,000	100761.000	151140.000	50381.000
4	1,000	1,000	1,000	6587.000	8336.000	2779.000
5	1,000	1,000	1,000	2501.000	3781.000	1253.000