

# GUARDIANS OF THE FINANCE GALAXY

THE 2019 CSMFO ANNUAL CONFERENCE



## Local Government Finance & Emergency Management: A Finance Officer's Role

*Alec Tune | Steve Flaherty | Nelson Ho*

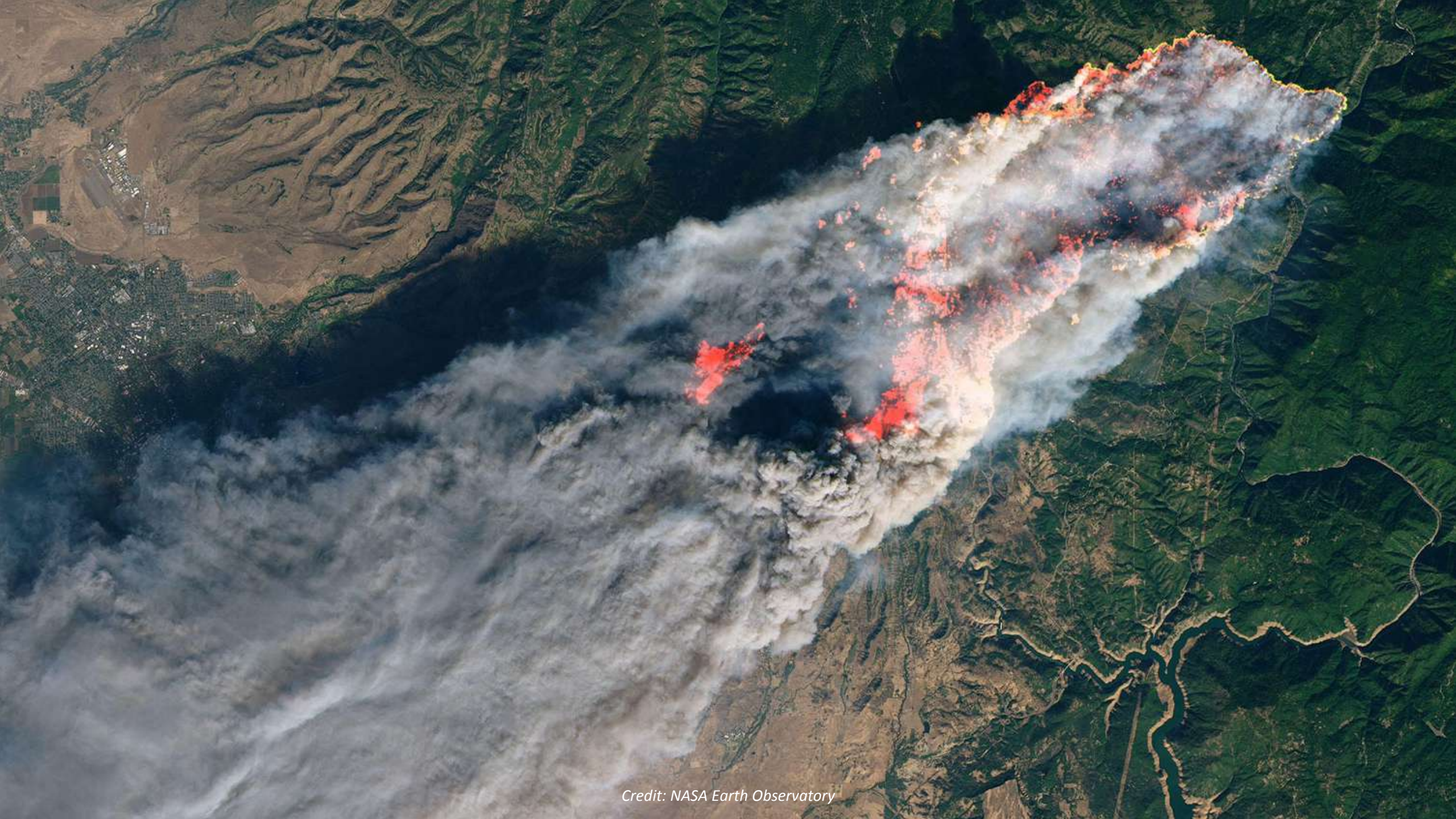






*Credit: NASA Earth Observatory*





Credit: NASA Earth Observatory





*Courtesy of Santa Barbara County Fire Department.*





*Credit: C. E. Meyer, U. S. Geological Survey*





Source: Library of Congress. Credit: Genthe, Arnold 1869-1942.



# BIGGEST DATA BREACHES OF THE 21<sup>ST</sup> CENTURY

CSO compiled a list of the most significant breaches of the 21<sup>st</sup> century. This list is based on how much risk or damage the breach caused for companies, insurers, users, or account holders.



SOURCE: <https://www.csoonline.com/article/2130877/data-breach/the-16-biggest-data-breaches-of-the-21st-century>



# ATLANTA CYBER ATTACK

## Colorado Agency Targeted in Nationwide Ransomware Scheme

Officials say no ransom was paid and no information was lost during a cyber extortion attack on the Colorado computer network last spring.

Nov. 28, 2018, at 3:48 p.m.

DENVER (AP) — OFFICIALS say no ransom was paid and no information was lost during a cyber extortion attack on the Colorado Department of Transportation's computer network last spring.

Brandi Simmons is a spokeswoman with the Colorado Governor's Office of Information Technology.

She said Wednesday that that agency, the FBI and others contained and "ransomware" attack that essentially froze hundreds of CDOT computers.

The then-anonymous hackers demanded a ransom to "unlock" those computers. Simmons says backup systems ensured no CDOT data was lost. She declined to say whether the ransom demand but said nothing was paid.

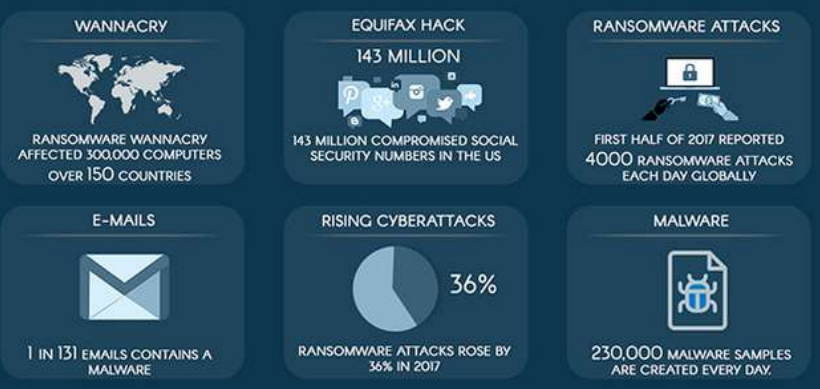
The U.S. Justice Department announced Wednesday that two Iranian companies were charged in connection with the extortion scheme, which targeted government agencies and businesses across the country.

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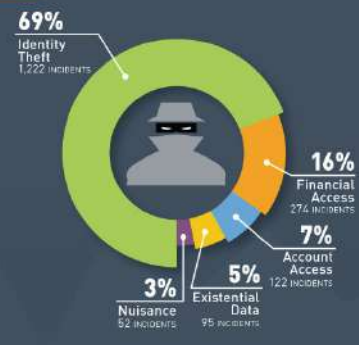
Tags: Colorado



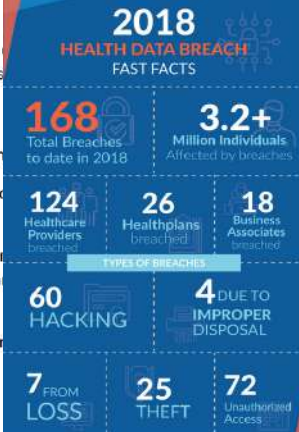
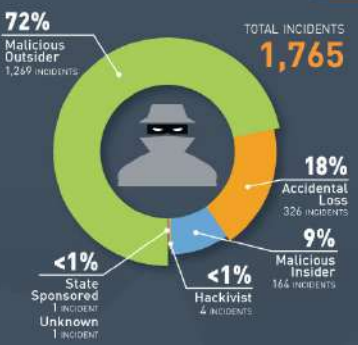
## SOME CYBERCRIME STATISTICS FROM 2017



### Number of Breach Incidents by Type



### Number of Breach Incidents by Source





# About Us...

## City & County of San Francisco

- ❑ **Government Structure: Board of Supervisors, several elected officers, and numerous other entities**
- ❑ **The only consolidated city-county in California**
- ❑ **One of only thirteen charter counties of California**
- ❑ **FY18-19 SF City Budget (~\$11B)**
- ❑ **~55 City Departments/Agencies**
- ❑ **~35,000 Employees**
  
- ❑ **Office of the Controller (~300 Employees)**
  - ❖ **Accounting Operations Division**
  - ❖ **Budget & Analysis Division**
  - ❖ **City Services Auditor Division**
  - ❖ **Payroll & Personnel Services Division**
  - ❖ **Economic Analysis Division**
  - ❖ **Public Finance Division**
  - ❖ **Administration Division**
  - ❖ **Systems Division**







# GUARDIANS OF THE FINANCE GALAXY

THE 2019 CSMFO ANNUAL CONFERENCE

## Part I: Emergency Management

*Alec Tune*



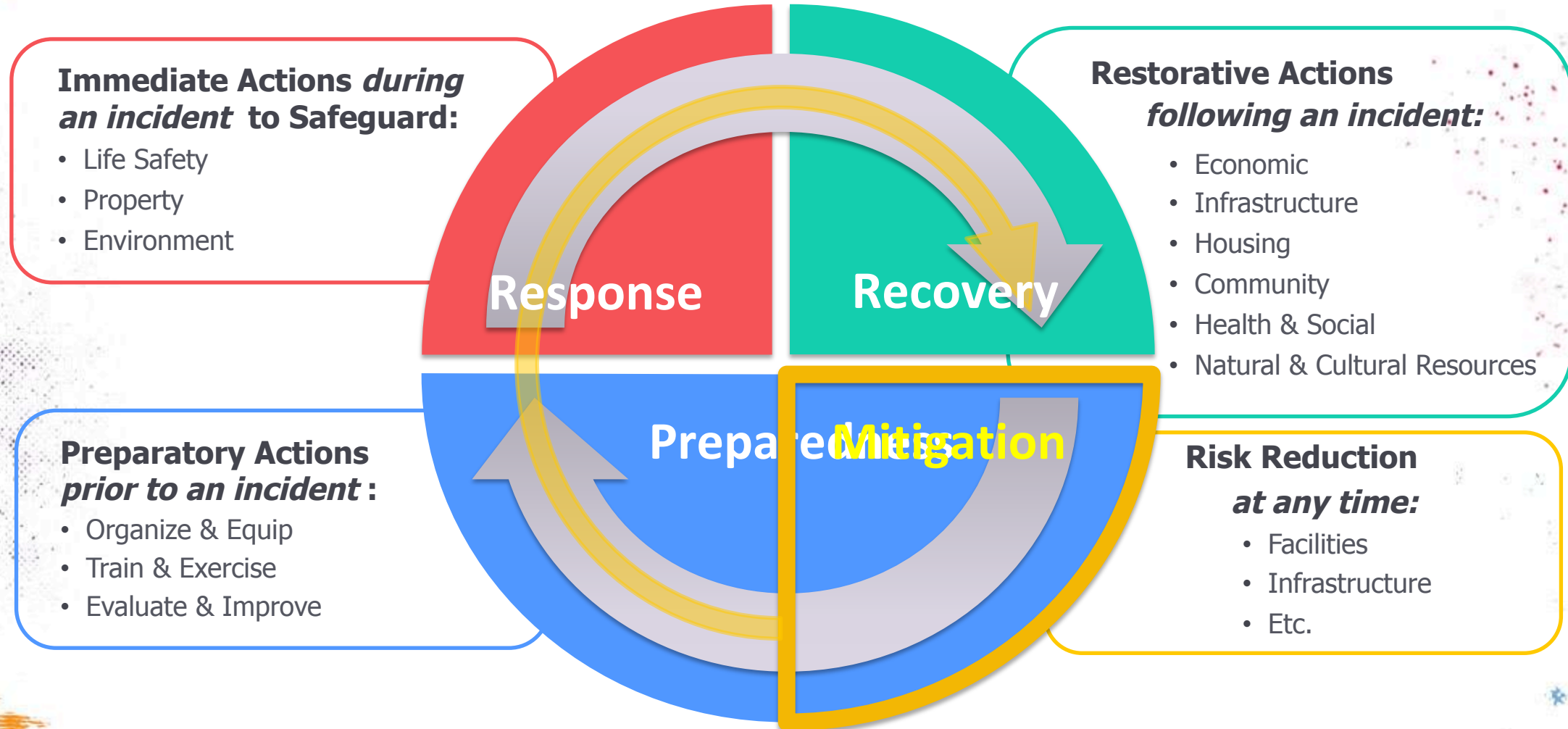


# Local Government Finance & Emergency Management

*A Finance Officer's Role*



## Phases of Emergency Management



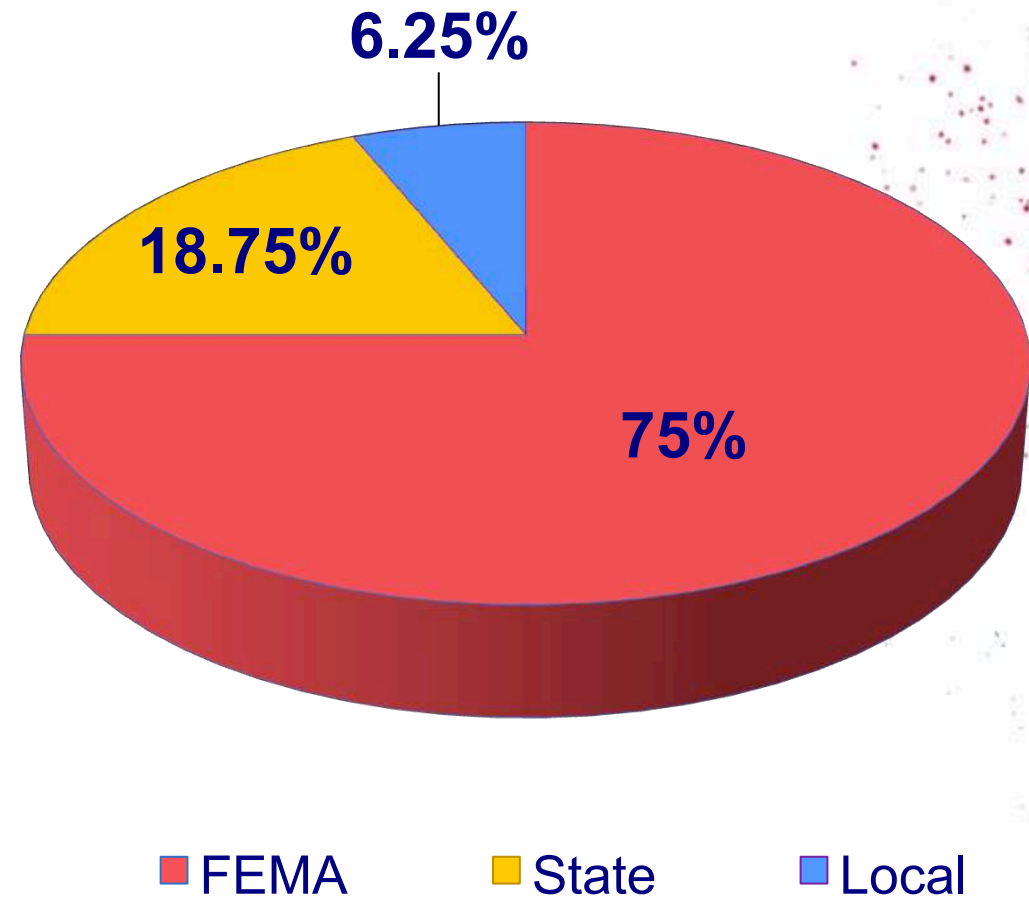


## Federal & State Disaster Assistance

- FEMA Public Assistance
- CDAA Public Assistance
- Multiple Federal Programs (USACE, FHWA, HUD, etc.)

## Other Sources

- Insurance
- Litigation
- Municipal: Reserves, G. O. Bonds
- Matching Funds: Donations





## Federal & State Disaster Assistance

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## Other Sources

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- Litigation
- Municipal: Reserves, G. O. Bonds
- Matching Funds: Donations

## Public Assistance Categories

### Emergency Work

<b>A</b>	Debris Removal
<b>B</b>	Emergency Protective Measures

### Permanent Work

<b>C</b>	Roads & Bridges
<b>D</b>	Water Control Facilities
<b>E</b>	Public Buildings & Equipment
<b>F</b>	Public Utilities
<b>G</b>	Parks, Recreational Facilities & Other



# Local Government Finance & Emergency Management

A Finance Officer's Role

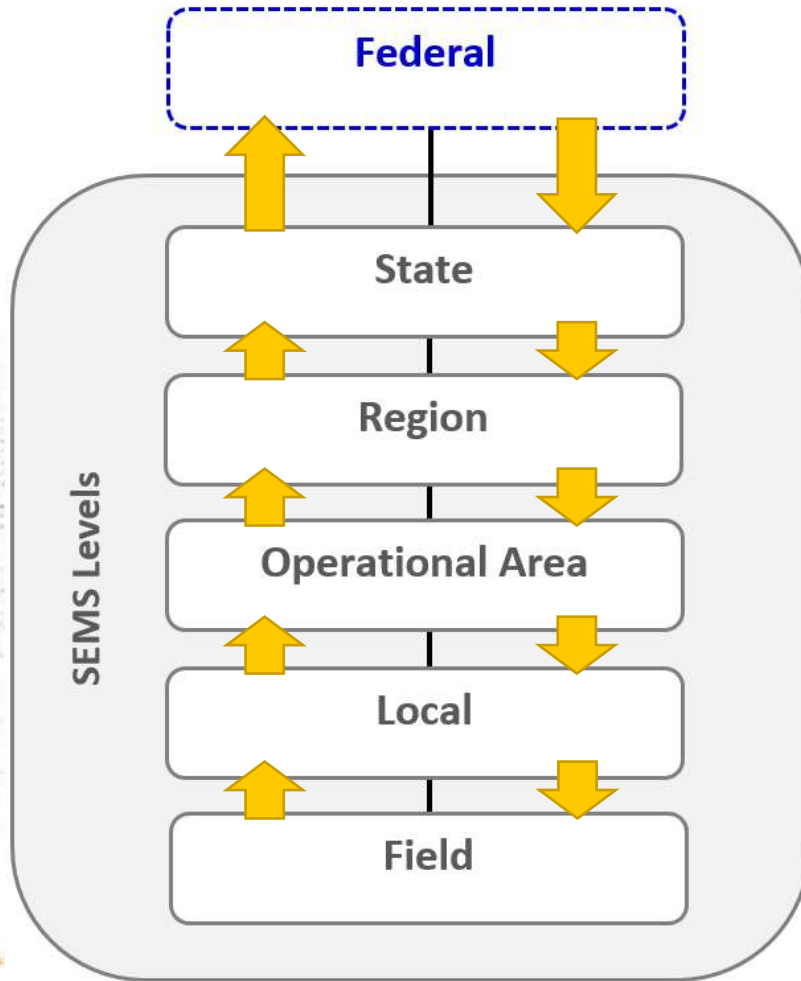


## Proclamations & Declarations

Declaration	Issuing Party	Authorization	Legal Authority
Town, City, or County			
Local Emergency	Council and/or Executive	Emergency Powers <ul style="list-style-type: none"><li>• Charter</li><li>• Muni Code</li></ul>	<ul style="list-style-type: none"><li>• Local Charter, Muni Code</li><li>• Cal. Govt. Code Title 2, Div. 1, Ch. 7 §8558(c)</li></ul>
State			
State of Emergency	Governor	CDA A PA	<ul style="list-style-type: none"><li>• Cal. Code of Regulations Title 19, Div. 2, Ch. 6 §2900 et. seq.</li></ul>
Director’s Concurrence	Director of Cal OES	CDA A PA (limited to Permanent Work)	
Federal			
Major Disaster	President	FEMA PA	<ul style="list-style-type: none"><li>• 42 USC, §5121 et. seq.</li></ul>
Emergency		FEMA PA (limited to Emergency Work)	



## Emergency Management Doctrine

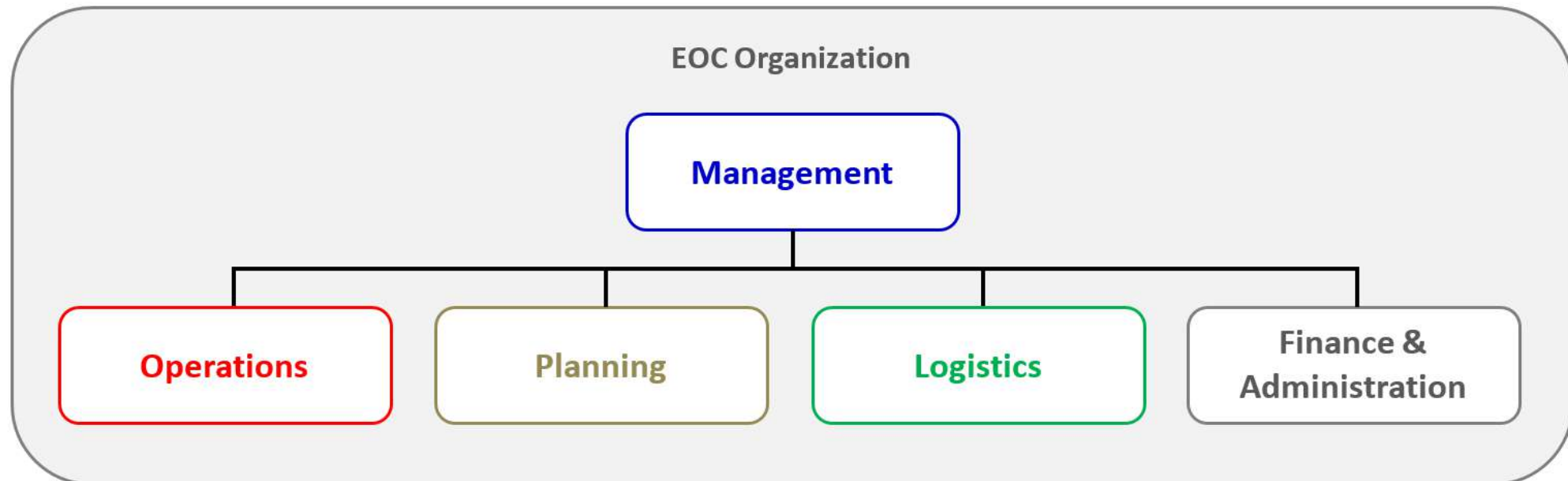


- California's Standardized Emergency Management System (SEMS)
- National Incident Management System (NIMS)
- Incident Command System (ICS)



## Emergency Management Doctrine

- California's Standardized Emergency Management System (SEMS)
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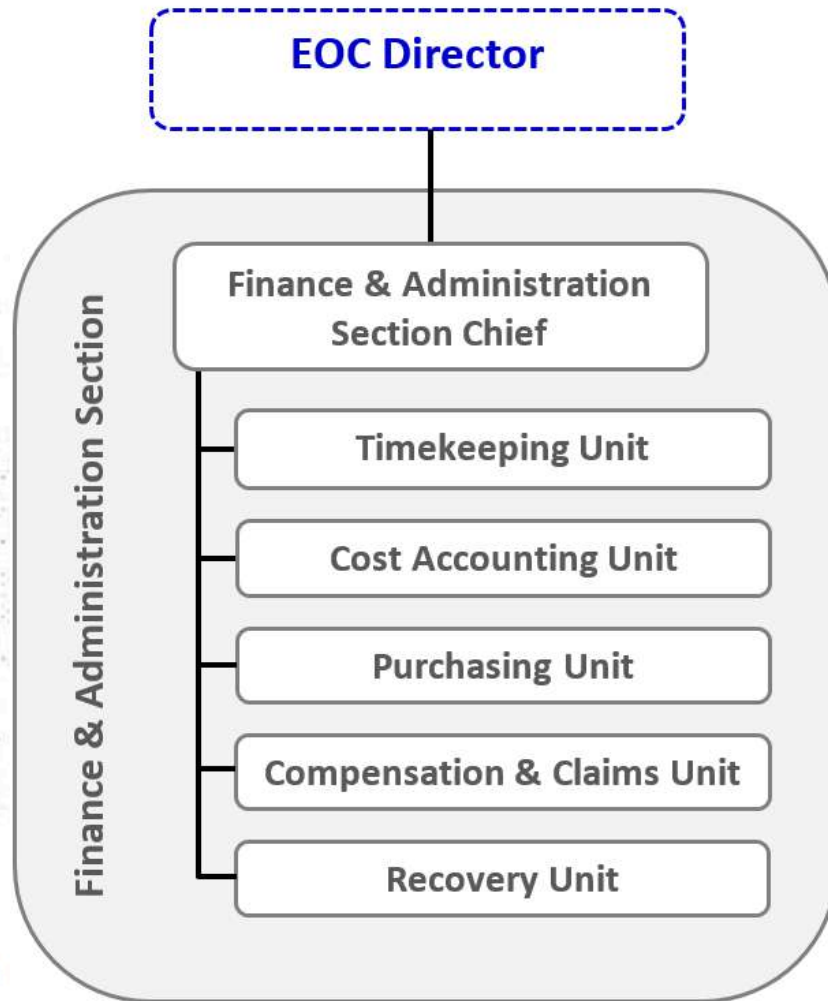


# Local Government Finance & Emergency Management

*A Finance Officer's Role*



## Finance & Administration



### List of Projects

- Emergency Work
- Permanent Work

### Labor

- "Force Account"
- Mutual Aid

### Equipment

- "Force Account"
- Rented

### Materials

### Contracted Services

**D**  
**O**  
**C**  
**U**  
**M**  
**E**  
**N**  
**T**  
**A**  
**T**  
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**T**  
**I**  
**O**  
**N**



# Local Government Finance & Emergency Management

A Finance Officer's Role



## Finance & Administration: Timekeeping

### Summary Duties

- ☐ Track & Record Time & Labor
  - ☐ Force Account Labor
  - ☐ Mutual Aid
  - ☐ Volunteers
- ☐ Report Time
- ☐ Travel / M&IE

### Job Resources

- ☐ Sign-in Sheets
- ☐ ICS 214 – Activity Log Forms
- ☐ Labor Summary Record
- ☐ Local Time System

ACTIVITY LOG (ICS 214)		
1. Incident Name: [REDACTED]		2. Operational Period: Date From: [REDACTED] Date To: [REDACTED] Time From: [REDACTED] Time To: [REDACTED]
3. Name: [REDACTED]	4. ICS Position: Damage Assessment Team [REDACTED]	5. Home Agency (and Unit): San Francisco Controller's Office
6. Resources Assigned:		
Name	ICS Position	Home Agency (and Unit)
[REDACTED]	Damage Assessment Team Leader	Fremont Fire Department
[REDACTED]	Damage Assessment Team, Asst. Team Leader	City of Santa Rosa Transportation & Public Works
[REDACTED]	Damage Assessment Team member	Yolo County Department of Financial Services
[REDACTED]	Cal OES Liaison	Cal OES Inland Region
7. Activity Log:		
Date/Time	Notable Activities	
1220	Orientation [REDACTED] and Safety Briefing [REDACTED] OSC and Acting Safety Officer); - Hazardous conditions include septic tanks, swimming pools entirely covered with ash and debris - Drive with caution in light of damaged culverts and other hazards; pull to the side of the road to safely park	
1230	Organize and load up	
1235	En route to [REDACTED] from [REDACTED] EOC in [REDACTED]	
1257	Arrive at [REDACTED] photodocument damage; geotagged photos - [REDACTED]; Minor Damage: [REDACTED]	
1316	depart	
1320	Arrive at [REDACTED] photodocument damage - structure and contents completely Destroyed Move (on foot) to [REDACTED] photodocument damage - structure and contents completely Destroyed; noted adjacent damage to culvert under [REDACTED] Move to [REDACTED] photodocument damage - park Affected: damage to "streetlights", irrigation system, surface materials at playground, etc. Move to [REDACTED] - structure appears Unaffected, though not fully accessible on all sides photodocument facility Move to [REDACTED] Police Station and Main Fire Station at and adjacent to [REDACTED] - damaged outbuilding depart	
1422	Arrive at [REDACTED] Road	



From Saturday 12/15/2018 to Friday 12/21/2018 ?

Personalize | Find | First 1 of 1 Last

	Sat 12/15	Sun 12/16	Mon 12/17	Tue 12/18	Wed 12/19	Thu 12/20	Fri 12/21	Total	Time Reporting Code	Incident Code	Incident Activity Code	Project	Project Activity	Combination Code
+	-		8.00	8.00	8.00	8.00	8.00	40.00	01 WKP - Regular Hours ▼					

Submit

Reported Time Status

Summ

### Reported Time Status

Date	Reported Status
12/17/2018	Scheduled
12/18/2018	Scheduled
12/19/2018	Scheduled
12/20/2018	Scheduled
12/21/2018	Scheduled

Self Service

Time Reporting

### Look Up Incident Code

Search by: Incident Code ▼ begins with

Look Up

Cancel

Advanced Lookup

### Search Results

View 100 First 1-14 of 14 Last

Incident Code	Description
201819000A	1414 Palou Displaced Persons
201819000B	Citywide Incident B
201819000C	Citywide Incident C
20181900WS	2018-19 Winter Storms
201819AIRA	Emergency @ SFO
201819MA01	2018 Mendocino Cmplx Fir (LAK)
201819MA02	2018 Hurricane Florence (NC)
201819MA03	2018 Camp Fire (BUT)
201819MA04	Mutual Aid Deployment 4
201819MA05	Mutual Aid Deployment 5
201819MA06	Mutual Aid Deployment 6
201819MA07	Mutual Aid Deployment 7
201819PUCA	Emergency @ PUC
201819XXXA	Departmental Emergency

### Look Up Incident Activity Code

Search by: Incident Activity Code ▼ begins with

Look Up

Cancel

Advanced Lookup

### Search Results

View 100 First 1-143 of 143 Last

Incident Activity Code	Description
01TN01	TRAFFIC CONTROL
01TN02	PUBLIC EVACUATION-LAND
01TN03	PUBLIC EVACUATION-MARINE
01TN04	TRANSPORT RESPONDERS-LAND
01TN05	TRANSPORT RESPONDERS-MARINE
02CM01	911/ PUBLIC SAFETY COMMS
02CM02	IT & TELECOMMS RESTORATION
02CM03	DT NETWORK OPS CENTER
02CM04	DT SECURITY OPS CENTER
02CM05	CYBER THREAT RESPONSE
03DB01	DEBRIS CLEARANCE (PUSH)
03DB02	DEBRIS, PUBLIC, COLLECT LAND
03DB03	DEBRIS, PUBLIC, COLLECT MARINE
03DB04	DEBRIS, PUBLIC, HAULING
03DB05	DEBRIS, PUBLIC, TEMP MGMT
03DB06	DEBRIS, PUBLIC, RECYCLING
03DB07	DEBRIS, PUBLIC, REDUCTION
03DB08	DEBRIS, PUBLIC, DISPOSAL
03DB09	DEBRIS, PUBLIC, MONITORING
03DB10	DEBRIS, PRIVATE, COLLECT LAND
03DB11	DEBRIS, PRIVATE, HAULING



FEDERAL EMERGENCY MANAGEMENT AGENCY  
**FORCE ACCOUNT LABOR SUMMARY RECORD**

Page **1** of **1**

1. APPLICANT	2. PA ID	3. PROJECT NO.	4. DISASTER NUMBER
5. LOCATION/SITE	6. CATEGORY B - Emergency Protective Measures		7. PERIOD COVERING

8. DESCRIPTION OF WORK PERFORMED  
Safety Assessment

		DATES AND HOURS WORKED EACH WEEK															COSTS				
		DATE	M 11/12	T 11/13	W 11/14	Th 11/15	F 11/16	S 11/17	Su 11/18	M 11/19	T 11/20	W 11/21	Th 11/22	F 11/23	S 11/24	Su 11/25	TOTAL HOURS	HOURLY RATE	BENEFIT RATE (%)	TOTAL HOURLY	TOTAL COSTS
NAME	REG.													9	8	8	25	\$ 78.09	39.77	\$ 109.15	\$ 2,728.66
JOB TITLE	O.T.													1	1	2	4	\$ 101.61		\$ 101.61	\$ 406.42
NAME	REG.													8	8	8	24	\$ 78.09	39.77	\$ 109.15	\$ 2,619.51
JOB TITLE	O.T.													1	1	1	3	\$ 101.61		\$ 101.61	\$ 304.82
NAME	REG.				8	8	8	8	8	8	8						56	\$ 78.09	39.77	\$ 109.15	\$ 6,112.20
JOB TITLE	O.T.				0	1	2	3	2	1	0						9	\$ 101.61		\$ 101.61	\$ 914.45
NAME	REG.																0			\$ -	\$ -
JOB TITLE	O.T.																0			\$ -	\$ -
NAME	REG.				8	8	8	8	8	8							48	\$ 78.09	39.77	\$ 109.15	\$ 5,239.03
JOB TITLE	O.T.				0	1	2	4	4	7							18	\$ 101.61		\$ 101.61	\$ 1,828.98
NAME	REG.				8	8	8	8	8								40	\$ 78.09	39.77	\$ 109.15	\$ 4,365.86
JOB TITLE	O.T.				4	4	4	4	4								20	\$ 101.61		\$ 101.61	\$ 2,032.10
NAME	REG.													8	8	8	24	\$ 78.09	39.77	\$ 109.15	\$ 2,619.51
JOB TITLE	O.T.													2	2	2	6	\$ 101.61		\$ 101.61	\$ 609.66
NAME	REG.													0	0	0	0			\$ -	\$ -
JOB TITLE	O.T.																0			\$ -	\$ -
NAME	REG.													8	8	8	24	\$ 78.09	39.77	\$ 109.15	\$ 2,619.51
JOB TITLE																					

**EOC Fin:**  
Time reported jointly on ICS 214 with volunteer J. Smith on this date.



# Local Government Finance & Emergency Management

A Finance Officer's Role



## Finance & Administration: Cost Accounting

### Summary Duties

- ☐ Cost Analysis
- ☐ Accounting
  - ☐ Labor
  - ☐ Equipment
  - ☐ Materials
  - ☐ Contracted Services

### Job Resources

- ☐ FEMA Schedule of Equipment Rates
- ☐ ICS 213 RR – Resource Request Forms
  - with attached receipts / invoices
- ☐ Local Financial System
- ☐ Government Credit Card Transaction Reports

RESOURCE REQUEST (ICS 213 RR), Adapted for FDA

1. Incident Name: <b>2019 Winter Storms</b>		2. Date/Time: <b>11 JAN 2018 1030</b>		3. Resource Request Number: <b>112018 LOGS 042</b>	
4. Order (Use additional forms when requesting different resource sources of supply.):					
Requestor	Qty.	Kind	Type	Detailed Item Description: (Vital characteristics, brand, specs, experience, size, etc.)	Cost
	4	pkg		Boxes copy / printer paper 8x10	
	2	PK		11x17 copy print paper	
	2	PK		Large flip charts	
	1	PK		Markers for flip chart	
Logistics	2			clip boards	
	1	PK		BROTHER 12mm 0.49 LAMINATED	
				WITHE TZE TAPE (PROMISS/FENAL)	
				have picture of cartridge see John	
5. Resource Status					
	Received by	Date/Time	Assigned to	Released to	Date/Time
6. Requested Delivery/Reporting Location: <b>Anytown EOC - 1011 Main St., Anytown, CA</b>					
7. Suitable Substitutes and/or Suggested Sources: <b>Office Depot - Staples - Costco</b>					
8. Requested by Name/Position: <b>Jane Doe</b>				9. Priority: <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> Routine <input checked="" type="checkbox"/> Low	
11. Logistics Order Number:				10. Section Chief Approval:	
13. Name of Supplier/POC: <b>Office Depot</b>				12. Supplier Phone/Fax/Email:	
14. Notes:					
15. Approval S					
17. Order plac					
18. Reply/Com					
19. Finance Se					
ICS 213 RR, Page 1					
Updated by FDA 2/2011					

Receipt

Invoice





New Window

General Information | Project Costing Definition | Manager | Location | User Fields | Rates | Attachments | Budget Alerts

Project 10033788

Add to My Projects

Description Citywide Incident C ☐ Program

Integration SFGOV City & County of San Francisco

Project Type RCVY Disaster Recovery

Percent Complete 0.00 As Of

Project Health As Of

### Project Schedule ?

Start Date 07/01/2018

### Description

Date/Time Stamp 08/01/18 1:38:39PM

User ID 178903

#### Description:

"Pre-populated project for a disaster or emergency occurring within the geographic area of San Francisco. The Project Description will be modified once the incident occurs."

12 characters remaining

#### Long Description:

### Project General

Help

"Pre-populated project for a disaster or emergency occurring within the geographic area of San Francisco county, and for which costs must be tracked for cost recovery purposes. Examples include: a major earthquake, terrorist attack, etc.

The Controller's Office will modify the Project Description to reflect the name of the incident, once the incident occurs (e. g. ""2018 Earthquake"", etc.).

For assistance in an emergency, contact the Controller's Office 24/7 at (415) [REDACTED]"

### Project Activities

### Gantt Chart

Project 10033783

Description 2018 Camp Fire (BUT)

➡ ⬅ ⬆ ⬇ ✂ 📄 📅 Number Rows

### Project Activities

#### Schedule

#### More Dates

#### Details

#### User Fields

Select	WBS ID	*Activity Name
<input type="checkbox"/>	1	Emergency Protective Mea
<input type="checkbox"/>	2	Debris Removal

Save as Template

Go To

More ▾



# Local Government Finance & Emergency Management

*A Finance Officer's Role*



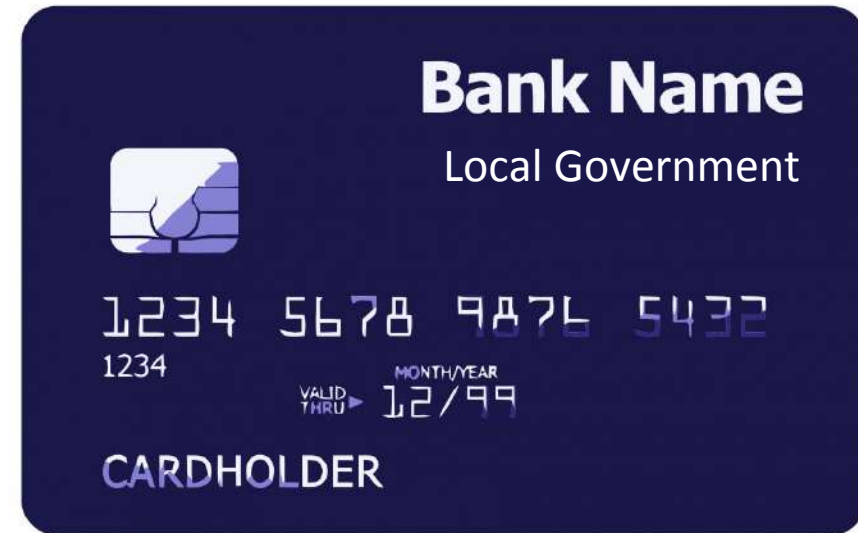
## Finance & Administration or Logistics: Purchasing

### Summary Duties

- ☐ Procurement:
  - ☐ Rentals
  - ☐ Supplies & equipment
  - ☐ Contracted services

### Job Resources

- ☐ Local purchasing rules
- ☐ Existing term contracts, competitively-bid
- ☐ Vendor lists (including out-of-area)
- ☐ Government-issued Credit Cards
- ☐ Continuity of payment procedures





## Finance & Administration: Compensation & Claims

### Summary Duties

- ☐ Document personnel:
  - ☐ Illnesses
  - ☐ Injuries
  - ☐ Fatalities
- ☐ Document response-caused damage to:
  - ☐ Property
  - ☐ Equipment

### Job Resources

- ☐ Injury Report Log
- ☐ e3301 – Workers' Comp. Claim Form
- ☐ e3267 – State Fund Claim Form
- ☐ DSW Volunteer Program guidance

### Labor Category

Form	Employee	Mutual Aid	Volunteer
Injury Report Log	✓	✓	✓
e3301	✓	✓	✓
e3267			✓



# Local Government Finance & Emergency Management

*A Finance Officer's Role*



## Finance & Administration: Recovery

### Summary Duties

- ☐ Prepare Initial Damage Estimate
- ☐ Prepare List of Projects
- ☐ Liaise with Cal OES / FEMA
- ☐ Coordinate documentation:
  - ☐ Labor, equip., materials records
  - ☐ Photodocumentation of damage
- ☐ Prepare records for pre-audit

### Job Resources

- ☐ Cal EOC IDE Form
- ☐ Project Files
- ☐ Asset / Insurance Records
- ☐ Geotagged photo app

The screenshot shows a web-based form titled 'Initial Damage Estimate' for the 'Incident: 2014 Statewide December Winter Storm'. The form includes sections for 'General Information', 'Part I: Private Property (Cumulative Damages)', 'Part II: Public Property (Includes eligible non-profit facilities) (Cumulative Damages)', 'Part III: Other', and 'Additional Information'. The 'Part I' section contains a table with columns for Property Type, # Destroyed, # Major Damage, # Minor Damage, # Affected, Dollar Loss, and Insurance (%). The 'Part II' section contains a table with columns for Type of Property, Estimated Dollar Loss, and Insured (%). The 'Part III' section contains a table with columns for Type and Estimate. The 'Additional Information' section contains a text area for 'Additional Comments'.





☀ 338°NW (T)    ● 39°45'6"N, 121°37'27"W ±16.4ft    ▲ 1667ft





# Local Government Finance & Emergency Management

*A Finance Officer's Role*



## Project Files

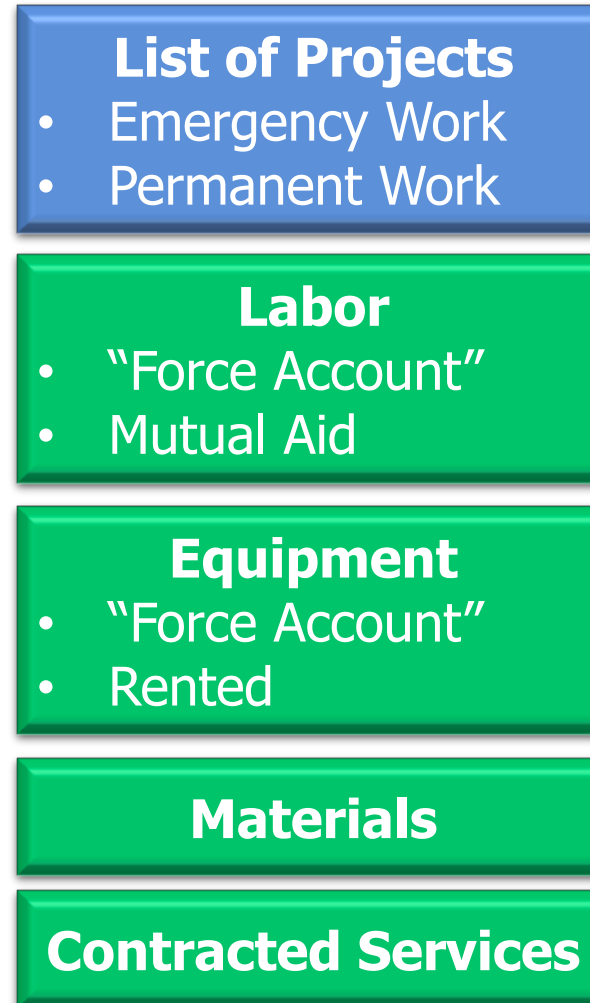
### ☐ List of Projects

### ☐ Emergency Work

- Project
  - Labor
  - Rented Equipment
  - Materials
  - Contracted Services
  - Other

### ☐ Permanent Work

- Project
  - Insurance Information
  - Damage
    - Photodocumentation
  - Subsequently expand to include:
    - Asset records
    - Labor, equip, materials, contract, etc.



Documentation

Nature of Work

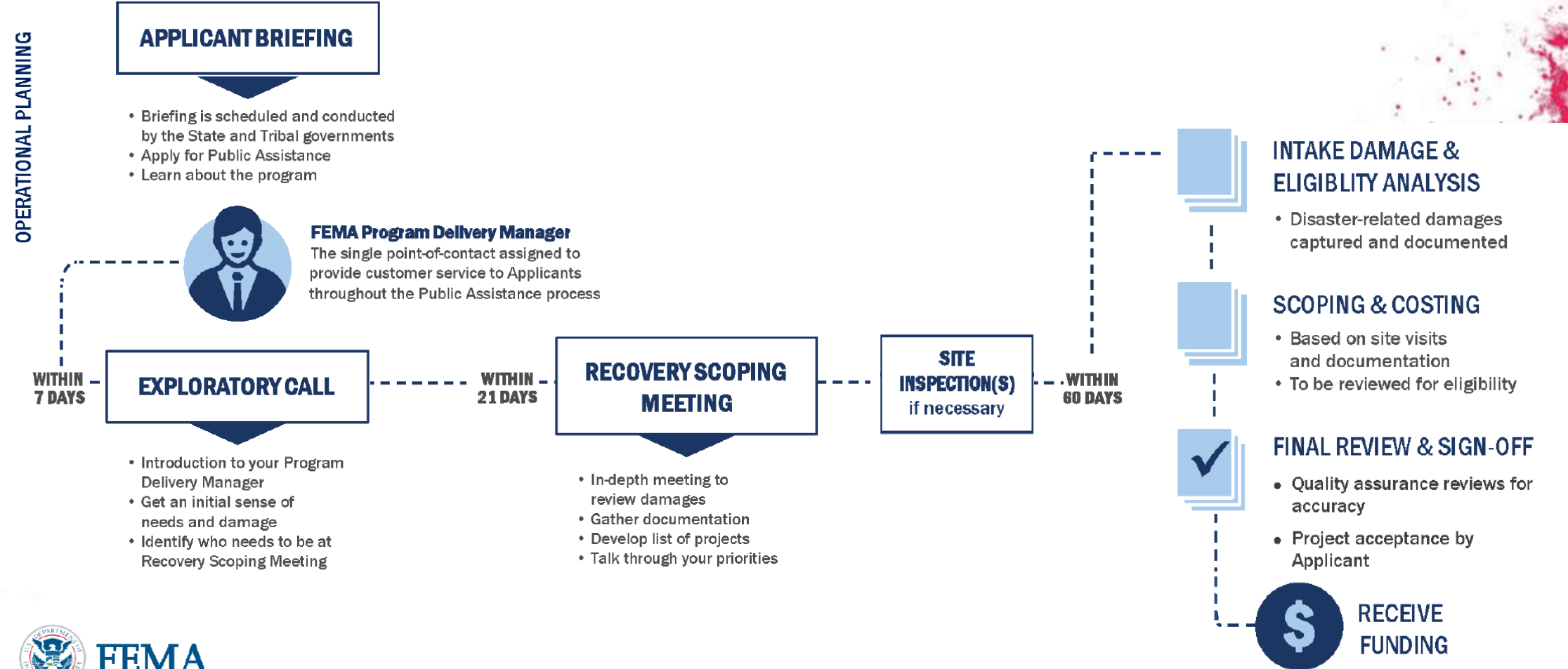
Location

# Local Government Finance & Emergency Management

A Finance Officer's Role



## PA Process & Deadlines







# GUARDIANS OF THE FINANCE GALAXY

THE 2019 CSMFO ANNUAL CONFERENCE

## Part II: IT Disaster Recovery

*Steve Flaherty | Nelson Ho*





# San Francisco Controller's Cyber Audits Team

## Mission:

Evaluate City cybersecurity efforts and assist in the evaluation of cybersecurity audit controls. Review department implementation plans for adoption of citywide and department-specific cybersecurity requirements. Perform security testing for departments in alignment with the citywide cybersecurity requirements to validate that departments effectively implement the requirements.

## Collaborative Partnerships:

- ☐ Chief Information Officers (CIOs)
- ☐ Chief Information Security Officers (CISOs)
- ☐ San Francisco Department of Technology
- ☐ Committee on Information Technology (COIT)

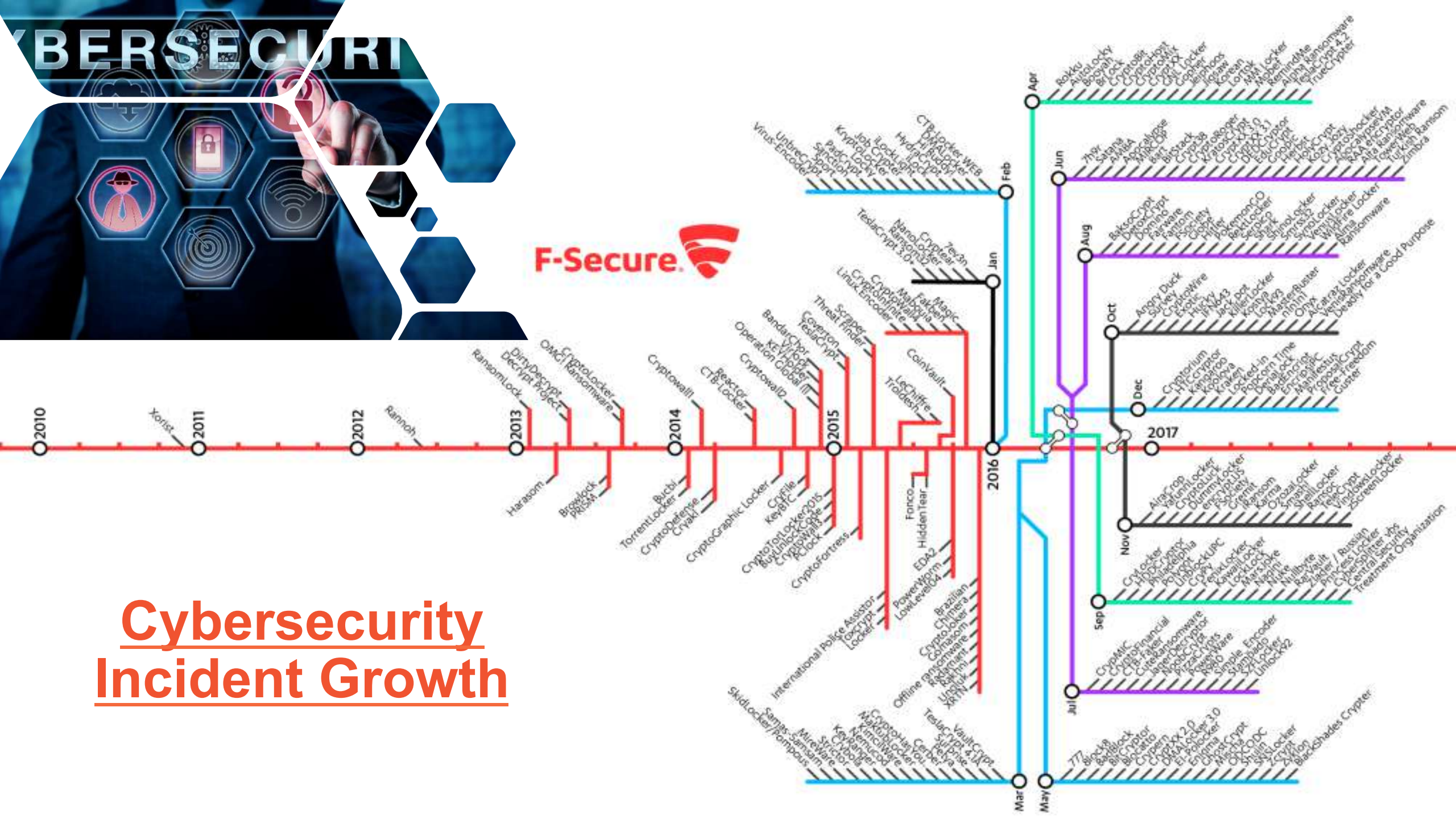
## Service Offerings:

- ☐ Penetration Testing and Vulnerability Assessments
- ☐ IT Governance Audits
- ☐ IT Policy Compliance
  - ❖ Cybersecurity Policy, Data Classification Standards, Awareness & Training, and Disaster Preparedness



# What is an IT Disaster?

- An unplanned occurrence that disrupts the operation of most or all of an organization's applications and prevents users from performing their business functions.
- A disaster is something that (1) does not commonly occur and (2) for which extraordinary response procedures are warranted.
- Software issues or temporary network outages are not considered IT disasters.



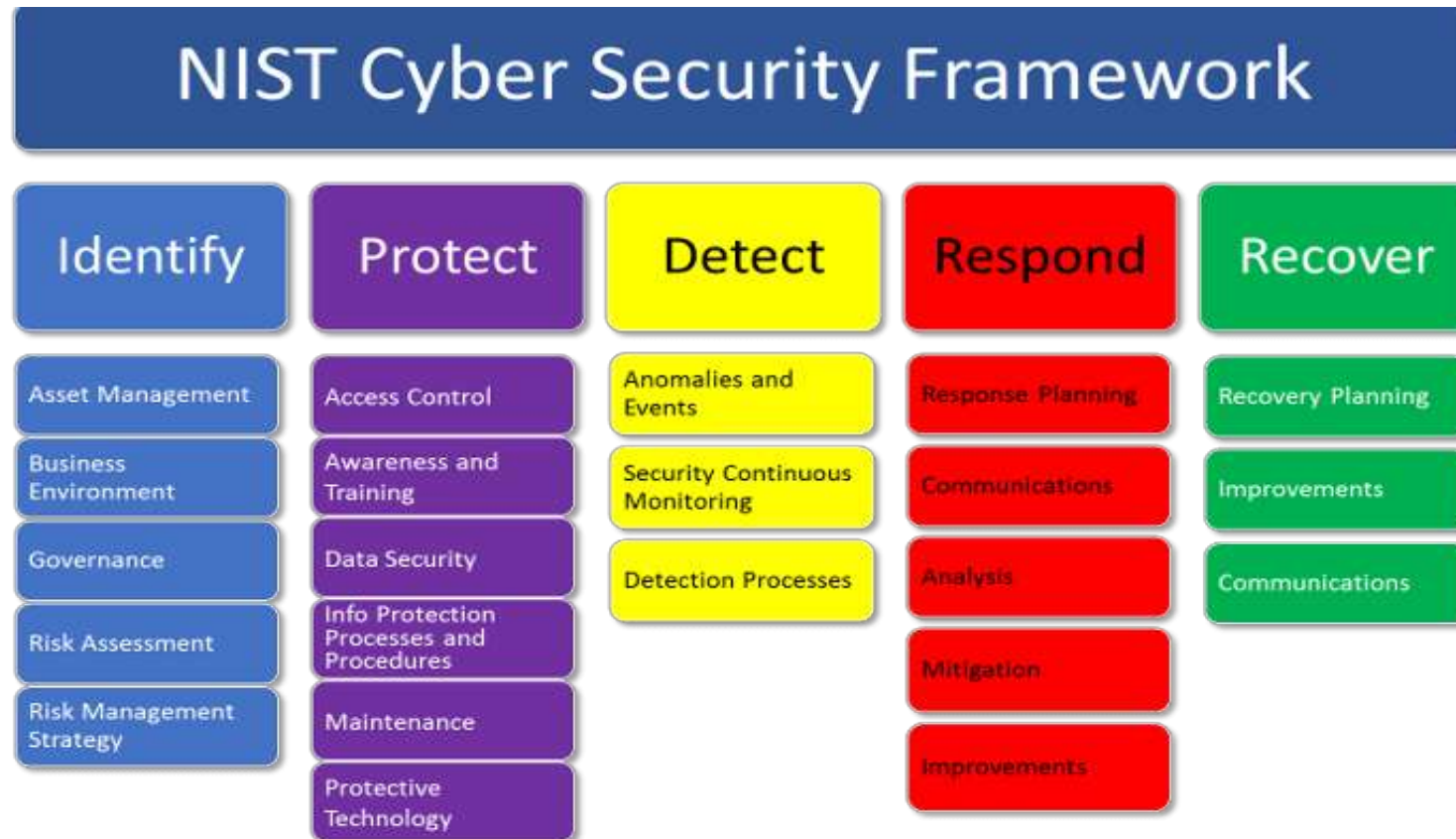
# Cybersecurity Incident Growth



# IT Disaster Trends

- ❑ Disaster trends are indicators - they provide us with clues about our risk and help inform decisions related to emergency planning, analysis, and prioritization of mitigation and preparedness activities.
- ❑ 2018 trends include:
  - ❖ Cyber incidents
    - Ransomware, crypto jacking, data breaches
  - ❖ Natural disasters
    - Fires, earthquakes, floods
  - ❖ New technologies
    - Impact of increasing interconnectivity, automation, drones

# Citywide Cybersecurity Policy





# Disaster Preparedness, Response, Recovery, and Resiliency Policy (DPR3)

- ❑ DPR3 requires all City and County of San Francisco departments to develop and implement disaster-related planning for information technology systems and data
- ❑ Goals of policy include:
  - ❖ Safeguarding and restoring data
  - ❖ Safeguarding hardware, software and facilities
  - ❖ Resuming critical business processes through high-availability and automate/manual failover recovery strategy
- ❑ The requires all departments to:
  - ❖ Conduct a business impact analysis
  - ❖ Develop recovery strategies
  - ❖ Test, train, and exercise
  - ❖ Maintain their plan

# Data Classification Standard

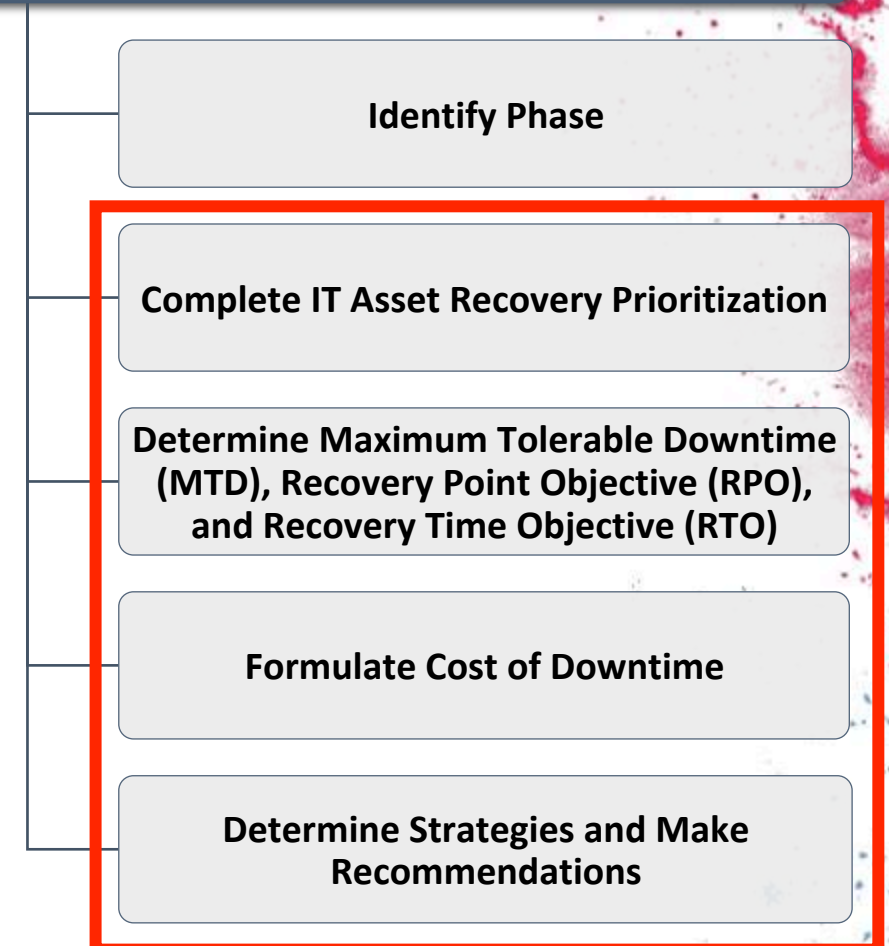
- ☐ Requires departments to categorize and label or mark data per classification levels and review classification of data on a regular basis.
- ☐ The objective is to ensure the confidentiality, availability, and integrity of your organization's data.
- ☐ Data classification and governance questions:
  - Do you have an inventory of your organization's most critical data and information assets?
  - Do you know where information assets are located in your organization?
  - Is your most valuable information only accessible to appropriate individuals?



# IT Recovery



## Biz Impact Analysis (BIA)



# IT Asset Recovery Prioritization

## Data Significance

### Mission Critical Data

a) Most valuable to an enterprise, high access	Level 1	Continuous to 24-Hours	Instantaneous to 12-Hours
b) High performance, high availability, less than 12-hours recovery, highest cost			

### Business Critical Data

a) Important to the enterprise, average cost	Level 2	24-48 Hours	12-24 Hours
b) Reasonable performance, good availability, less than 24-hours recovery			

### Operational Data

a) Cost sensitive, low access, large volumes	Level 3	2-7 Days	2-5 Days
b) Online performance, high availability, less than 1-week of recovery			

### Archive Data

a) Cost sensitive, low access, large volumes	Level 4	1-4 Weeks	1-2 Weeks
b) Less than 72-hours retrieval time, automated retrieval			

### Offline Data

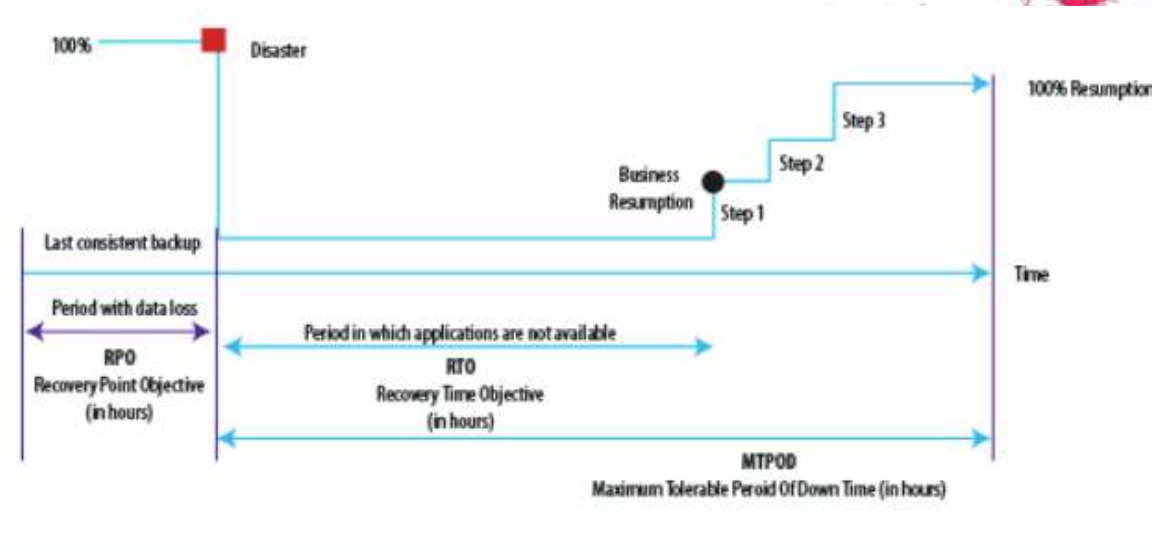
a) Backup or compliance related	Level 5	4-8 Weeks	> 2 Weeks
b) Very cost sensitive, limited access,			
c) ~7-days retrieval time			



# Recovery Objective Concepts

- ❑ **Recovery Point Objective (RPO)**
  - ❖ Based on acceptable data loss
  - ❖ Indicates earliest point in time in which it is acceptable to recover the data
  - ❖ Maximum amount of data an IT-based business process may lose

- ❑ **Recovery Time Objective (RTO)**
  - ❖ Based on acceptable downtime
  - ❖ Indicates earliest point in time at which the business operations must resume after a disaster
  - ❖ Maximum amount of time that an IT-based business process can be down
  - ❖ RTO requirements are driven by the mission-critical nature of the business



# Maximum Tolerable Downtime (MTD)

Estimates that may be acceptable for an organization:

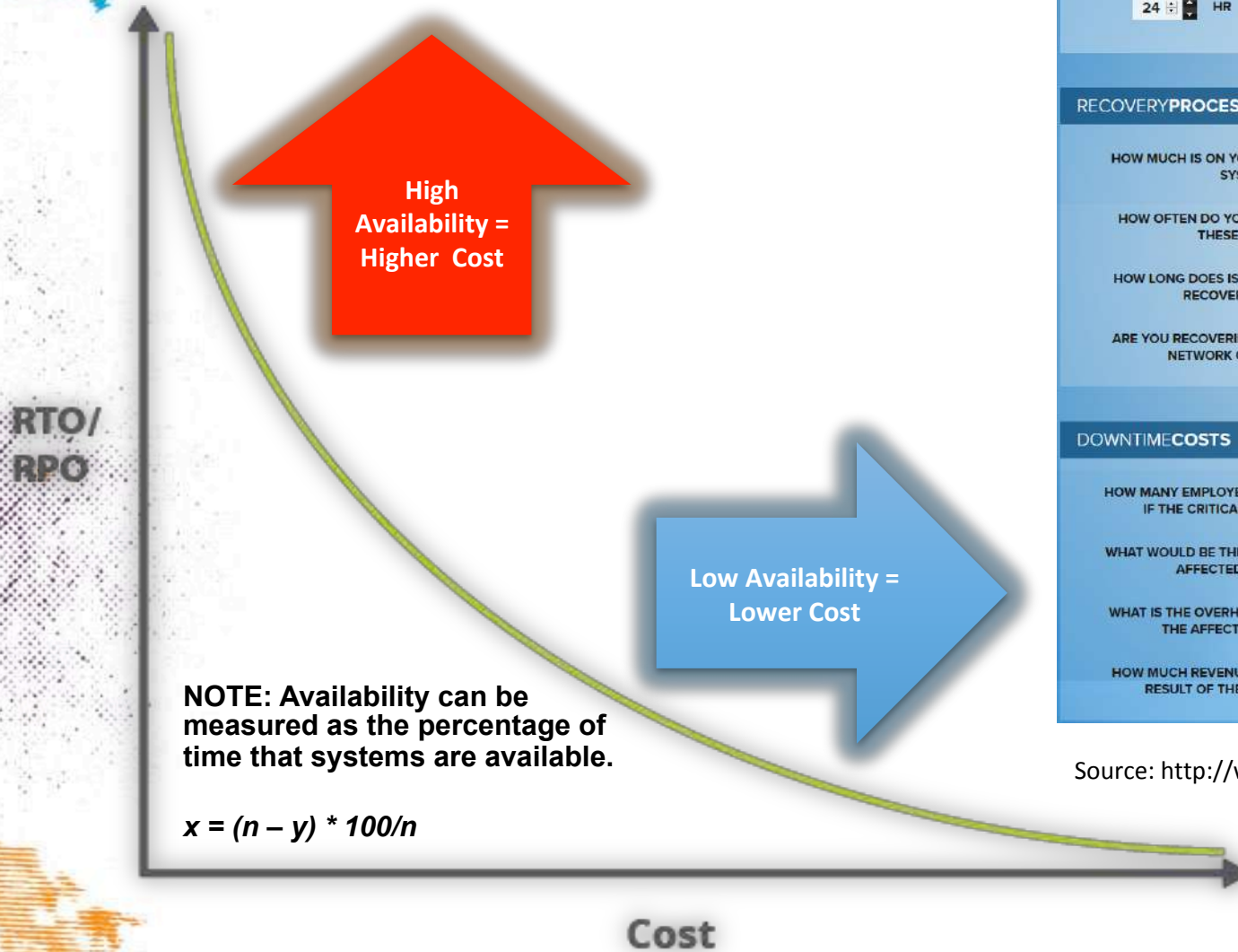
<u>System Rating</u>	<u>Duration</u>
Nonessential	30 days
Normal	7 days
Important	72 hours
Urgent	24 hours
Critical	Minutes to hours



MTD a.k.a. **Maximum Tolerable Outage (MTO)** and  
**Maximum Tolerable Period Of Downtime (MTPOD)**



# Cost of Downtime



SET OBJECTIVES	
<b>RECOVERY TIME OBJECTIVE</b> 24 HR 00 MIN	<b>RECOVERY POINT OBJECTIVE</b> 12 HR 0 MIN
<b>RECOVERY PROCESS</b>	
HOW MUCH IS ON YOUR CRITICAL BUSINESS SYSTEMS?	999 GB
HOW OFTEN DO YOU CURRENTLY BACKUP THESE SYSTEMS?	24 HR 0 MIN
HOW LONG DOES IT TAKE TO INITIATE YOUR RECOVERY PROCESS?	12 HR 0 MIN
ARE YOU RECOVERING DATA FROM A LOCAL NETWORK OR THE CLOUD?	LOCAL CLOUD
<b>DOWNTIME COSTS</b>	
HOW MANY EMPLOYEES WOULD BE AFFECTED IF THE CRITICAL SYSTEMS FAILED?	350 EMPLOYEES
WHAT WOULD BE THE AVERAGE WAGE OF THE AFFECTED EMPLOYEES?	30 DOLLARS PER
WHAT IS THE OVERHEAD COST PER HOUR OF THE AFFECTED EMPLOYEES?	0 DOLLARS PER
HOW MUCH REVENUE WOULD BE LOST AS A RESULT OF THE SYSTEM FAILURE?	0 DOLLARS PER
<b>RESULTS</b>	
<b>RECOVERY PROCESS</b> CRITICAL SYSTEM DATA: 999 GB TIME BETWEEN BACKUPS: 1 DAYS 0 HOURS 0 MINUTES RECOVERY PROCESS START: 0 DAYS 12 HOURS 0 MINUTES ESTIMATE DOWNTIME: 0 DAYS 14 HOURS 50 MINUTES	
<b>DOWNTIME COSTS</b> EMPLOYEES AFFECTED: 350 AVERAGE WAGE: \$30/HR OVERHEAD COSTS: \$0/HR REVENUE LOST: \$0/HR TOTAL COST: \$10500/HR	
<b>TOTAL DOWNTIME COST (DOWNTIME * COST PER HR)</b> <b>\$155820</b>	
RECOVERY TIME OBJECTIVE <b>MET</b> RECOVERY POINT OBJECTIVE <b>NOT MET</b>	
<div>PRINT</div>	

Source: <http://www.quick-backup-recovery.com>

# Determine IT Recovery Strategies



- ☐ **Internal Recovery:** data sent to *own remote facility* (or mirrored site) at regular intervals.
- ☐ **Vendor Supported Recovery:** data sent to *outsourced facility* at regular intervals.
- ☐ **Hybrid Recovery:** data sent to a combination of own remote facility, outsourced facility, and cloud provider at regular intervals.
- ☐ **Cloud Recovery:** enable continuous access to systems and data, even after a disaster.

## NOTE:

- Regular Intervals = Availability Requirements [which is dependent on Recovery Priorities]
- On-Premise Redundancy is the costliest recovery strategy.
- Majority of organizations use an outsourced disaster recovery provider to provide a stand-by site and systems rather than using their own remote facilities.





# NIST SP 800-34

Personnel Contact List

Vendor Contact List

Detailed Recovery Procedures

Alternate Processing Procedures

System Validation Test Plan

Alternate Storage, Site and Telecommunications

Diagrams (System and Input/Output)

System Inventory

Interconnections Table

Test and Maintenance Schedule

Associated Plans and Procedures

Business Impact Analysis

Document Change Page



# GUARDIANS OF THE FINANCE GALAXY

THE 2019 CSMFO ANNUAL CONFERENCE

