National Center for Employee Development (NCED)

Norman, OK

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NIST Community Resilience Program –

Interdependencies

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Chapter 3 and 4 Writer

Chapter 4: Interdependencies and Cascading Effects

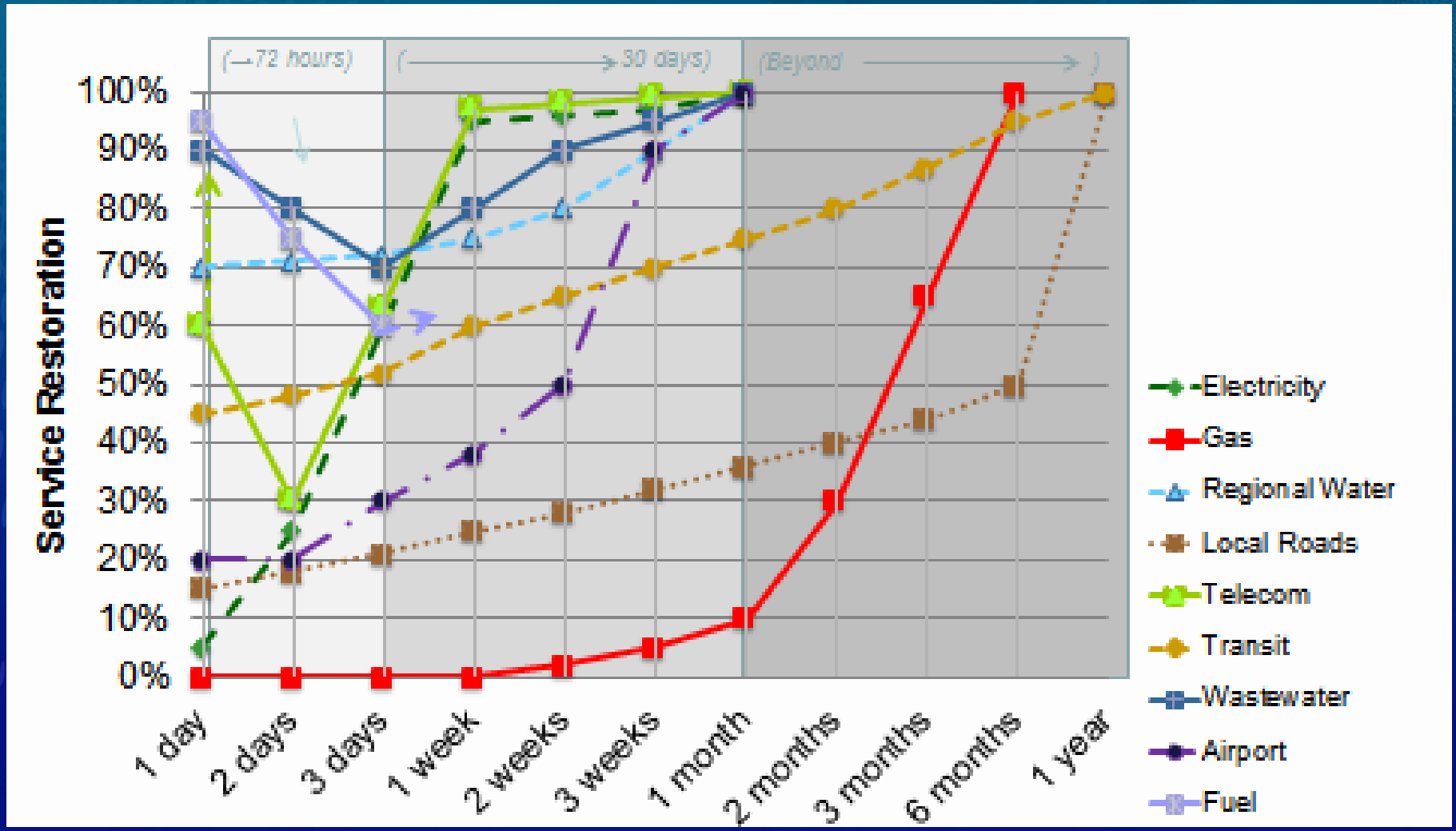
1. Interdependencies of Building Clusters
   - Buildings needed to support Functional Categories
   - Infrastructure needed to support Buildings

2. Interdependencies among Infrastructure
   - Infrastructure needed to support Infrastructure

Building Resilient Matrix

Functional Category: Cluster	(4) Support Needed	(5) Target Goal	Overall Recovery Time for Hazard and Level Listed								
			Phase 1 – Response			Phase 2 – Workforce			Phase 3 – Community		
			Days 0	Days 1	Days 1-3	Wks 1-4	Wks 4-8	Wks 8-12	Mos 4	Mos 4-36	Mos 36+
Critical Facilities		A									
Emergency Operation Centers			90%								
First Responder Facilities			90%								
Acute Care Hospitals			90%								
Emergency Housing		B									
Temporary Emergency Shelters				90%							
Single and Multi-family Housing				90%							
Housing/Neighborhoods		B									
Critical Retail				30%	60%	90%					
Churches and Spiritual Centers				30%	60%	90%					
Schools					30%	60%	90%				
Community Recovery		C									
Businesses						30%		60%		90%	

Potential Service Restoration Timeframes (CCSF)



Water Resilient Matrix

Functional Category: Cluster	(4) Support Needed	(5) Target Goal	Overall Recovery Time for Hazard and Level Listed								
			Phase 1 – Response			Phase 2 – Workforce			Phase 3 – Community		
			Days 0	Days 1	Days 1-3	Wks 1-4	Wks 4-8	Wks 8-12	Mos 4	Mos 4-36	Mos 36+
Source		1									
Potable water at supply (WTP, wells, impoundment)			30%		60%	90%			X		
Water for fire suppression at key supply points			90%			X					
Transmission (including Substations)		1									
Backbone transmission facilities (pipelines, pump stations, and reservoirs)			90%					X			
Distribution											
Critical Facilities		1									
Hospitals, EOC, Police Station, Fire Stations				60%	90%			X			
Emergency Housing		1									
Emergency Shelters				60%	90%			X			
Housing/Neighborhoods		2									
Drink water available at community distribution centers					60%	90%					
Water for fire suppression at fire hydrants						90%				X	
Community Recovery Infrastructure		3									
All other clusters					30%	90%				X	

Summary Resilience Matrix

Functional Category: Cluster	Overall Recovery Time for Hazard and Level Listed								
	Phase 1 – Response			Phase 2 – Workforce			Phase 3 – Community		
	Days 0	Days 1	Days 1-3	Wks 1-4	Wks 4-8	Wks 8-12	Mos 4	Mos 4-36	Mos 36+
Critical Facilities									
Buildings	90%								
Transportation		90%							
Energy						90%			
Water			90%						
Waste Water				90%					
Communication	90%								
Emergency Housing									
Buildings			90%						
Transportation			90%						
Energy							90%		
Water			90%						
Waste Water				90%					
Communication				90%					
Housing/Neighborhoods									
Buildings				90%					
Transportation					90%				
Energy							90%		
Water				90%					
Waste Water					90%				
Communication				90%					
Community Recovery									
Buildings								90%	
Transportation								90%	
Energy							90%		
Water				90%					
Waste Water								90%	
Communication				90%					

Interdependencies

- Opportunities for reconciliation
  - Confirm/refine building recovery time
  - Confirm utility recovery time
  - Determine options for providing temporary services
  - Determine options for focusing utility system
  - Determine options for upgrading utility system
- Identify best short term solution
- Implement performance goal during long term reconstruction opportunities