



# Property Risk Consulting Guidelines

A Publication of AXA XL Risk Consulting

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#### **EARTHQUAKE HAZARD ZONES - U.S.**

AXA XL Risk Consulting earthquake hazard zones for the U.S. states, possessions and territories are listed on the following pages. The zone numbers are derived from the Applied Technology Council (ATC) earthquake hazards map for Effective Peak Acceleration (EPA) coefficient  $A_a$ . The correlation between the EPA, ATC Zones and Modified Mercalli Intensity is shown in Table 1

TABLE 1
Effective Peak Acceleration (Aa) Vs. ATC Zones Vs. MMI

Aa	ATC Zone	ММІ
0.40	7	>VIII
0.30	6	VIII
0.20	5	VII
0.15	4	VI
0.10	3	V
0.05	2	III & IV
<0.05	1	I & II

The Applied Technology Council earthquake hazards map is a culmination of investigative research on the part of the United States Geological Survey (USGS), Academia, Private and Federally Funded organizations and agencies charged with identifying especially hazardous (from earthquake) areas of the Country.

The USGS, under the National Earthquake Hazards Reduction Program (NEHRP) assembled teams of experts (engineering consultants and federal government geoscientists) to evaluate the earthquake hazards. The National Security Council requested Federal Emergency Management Agency (FEMA) also evaluate and model for regional defense and economic impacts. The Applied Technology Council (ATC) became the Agency representative designated to develop methods to estimate damage and loss to infrastructure. FEMA also correlated efforts and supported consultants for the private sector evaluations.

The Federal and Academic scientist teams (geology, seismology and geoscience) developed the seismic hazard data. The damage modeling and correlation to hazard map preparation was overseen by the ATC. The project work has been reviewed by the Earthquake Engineering Committee, National Academy of Science, et al and approved by the National Research Council. The work, including the map is expected to become U.S. standard.

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## **ALABAMA**

ZONE	COUNTIES OF:			
1	All Counties except those noted below.			
2	Blount Calhoun Cherokee Clay Cleburne Colbert Cullman De Kalb Etowah	Franklin Jackson Jefferson Lamar Lauderdale Lawrence Limestone Madison Marion	Morgan Randolph Shelby St. Clair Talladega Tuscaloosa Walker Winston	

## **ALASKA**

ZONE	TERRITORY		
2	Nome	North Slope	Northwest Artic
4	Wade Hampton		
6	Bethel	Fairbanks-North Star	Juneau
7	Aleutian Islands Anchorage Angoon Bristol Bay Dillingham Haines	Kenai Peninsula Ketchikan Gateway Kodiak Island Lake and Peninsula Matanuska–Susitna Prince of Wales	Sitka Skagwa-Yakutat-Angoon Southeast Fairbanks Valdez-Cordova Wrangell-Petersburg
4-6 (See Map)	Yukon–Koyukuk		

## **ARIZONA**

ZONE	COUNTIES OF:			
1	All Counties except t	those noted below.		
2	Coconino Mohave	Navajo	Pima	
3	Cochise Graham	Greenlee		
5	La Paz	Yuma		

#### **ARKANSAS**

ZONE	COUNTIES OF:			
1	Ashley	Cleveland	Madison	
	Benton	Columbia	Miller	
	Bradley	Dallas	Nevada	
	Calhoun	Drew	Ouachita	
	Carroll	Garland	Union	
	Chicot	Hot Spring	Washington	
	Clark	Lafayette	Yell	
2	All Counties except tho	se noted above and below.		
3	Arkansas	Izard	Phillips	
	Cleburne	Lonoke	Stone	
	Fulton	Polk		
4	Independence	Monroe	Sharp	
	Lee	Prairie	White	
5	Clay	Greene	Poinsett	
	Craighead	Jackson	Randolph	
	Crittenden	Lawrence	St. Frances	
	Cross	Mississippi	Woodruff	

## **CALIFORNIA**

ZONE	COUNTIES OF:			
3	Butte Del Norte Modoc	Shasta Siskiyou Sutter	Yuba	
4	Amador Calaveras Colusa	El Dorado Glenn Mariposa	Tehama Tuolumne	
5	Alpine Humboldt Lassen Madera	Nevada Placer Plumas Sacramento	Sierra Trinity Yolo	
6	Lake	San Joaquin		
7	All Counties except th	ose noted above.		

#### **COLORADO**

ZONE	COUNTIES OF:			
1	Baca Bent Cheyenne Crowley Huerfano Kiowa	Kit Carson Las Animas Lincoln Logan Otero Phillips	Prowers Pueblo Sedgwick Washington Yuma	
2	All counties except noted above and below			
3	Archuleta Conejos	Hinsdale Mineral	Rio Grande Saguache	

## **CONNECTICUT**

ZONE	COUNTIES OF:
3	Entire State

#### **DELAWARE**

ZONE	COUNTIES OF:
1	All counties except noted below
2	New Castle

## **DISTRICT OF COLUMBIA**

ZONE	COUNTIES OF:
1	Entire District

#### **FLORIDA**

ZONE	COUNTIES OF:
1	Entire State

#### **GEORGIA**

ZONE	COUNTIES OF:			
1	All Counties except the	nose noted below.		
2	Appling Baldwin Bibb Bleckley Butts Carroll Clayton Coweta Crawford Dodge Douglas Evans Fayette Glynn Haralson	Heard Henry Houston Jeff Davis Jones Lamar Laurens Liberty Long McIntosh Meriwether Monroe Montgomery Paulding Peach	Pike Polk Pulaski Spalding Talbot Tattnall Taylor Telfair Toombs Twiggs Upson Wayne Wheeler Wilcox Wilkinson	

# GEORGIA (Cont'd.)

ZONE	COUNTIES OF:			
3	Banks	Forsyth	Murray	
	Barrow	Franklin	Newton	
	Bartow	Fulton	Oconee	
	Bryan	Gilmer	Oglethorpe	
	Bulloch	Glascock	Pickens	
	Burke	Gordon	Putman	
	Candler	Greene	Rabun	
	Catoosa	Gwinnett	Richmond	
	Chatham	Habersham	Rockdale	
	Chattooga	Hall	Screven	
	Cherokee	Hancock	Stephens	
	Clarke	Hart	Taliaferro	
	Cobb	Jackson	Towns	
	Columbia	Jasper	Treutlen	
	Dade	Jefferson	Union	
	Dawson	Jenkins	Walker	
	DeKalb	Johnson	Walton	
	Effingham	Lincoln	Warren	
	Elbert	Lumpkin	Washington	
	Emanuel	Madison	White	
	Fannin	McDuffie	Whitfield	
	Floyd	Morgan	Wilkes	

## **HAWAII**

ZONE	COUNTIES OF:			
2	Islands of Kauai	Niihau		
3	Island of Oahu	Honolulu		
4	Kahoolowe Lanai	Maui	Molokai	
6	Island of Hawaii			

## **IDAHO**

ZONE	COUNTIES OF:			
1	Boundary Latah	Lewis	Nez Perce	
2	All counties except no	oted above and below		
3	Cassia	Power		
4	Bingham	Jefferson	Madison	
5	Bannock Bear Lake Bonneville	Caribou Franklin	Oneida Teton	
7	Fremont			

## **ILLINOIS**

ZONE	COUNTIES OF:			
1	All Counties except tho	se noted below.		
2	Adams Brown Calhoun Cass Champaign DeWitt Ford	Greene Iroquois Logan Macon Mason McLean Menard	Morgan Piatt Pike Sangamon Schuyler Scott Vermilion	
3	Bond Christian Clark Clay Coles Crawford Cumberland Douglas	Edgar Edwards Effingham Fayette Jasper Jersey Lawrence Macoupin	Madison Montgomery Moultrie Richland Shelby Wabash White	
4	Clinton Franklin Gallatin Hamilton Hardin Jackson Jefferson	Johnson Marion Massac Monroe Perry Pope	Randolph Saline St Clair Washington Wayne Williamson	
5	Alexander	Pulaski	Union	

## **INDIANA**

ZONE	COUNTIES OF:			
1	All Counties except the	ose noted below.		
2	Adams Allen Benton Boone Brown Carroll Cass Clay Clinton Crawford Daviess De Kalb Dubois	Greene Hamilton Hendricks Howard Jasper Jay Lawrence Marion Martin Monroe Montgomery Morgan Newton	Owen Parke Perry Pike Putman Spencer Steuben Tippecanoe Tipton Vermillion Vigo Warren Warrick	
3	Fountain Gibson Knox	Orange Posey Sullivan	White Vanderburgh	

## **IOWA**

ZONE	COUNTIES OF:			
1	All Countries except	those noted below.		
2	Adams Audubon Cass Cherokee Crawford	Harrison Ida Monona Montgomery Plymouth	Pottawattamie Shelby Sioux Taylor Woodbury	
3	Fremont	Mills	Page	

#### **KANSAS**

ZONE	COUNTIES OF:			
1	All Counties except the	ose noted below.		
2	Allen Bourbon Butler Chase Chautauqua Cherokee Clay Cloud Cowley	Crawford Dickinson Elk Greenwood Harper Harvey Labette Marion Mcpherson	Montgomery Neosho Ottawa Republic Saline Sedgwick Sumner Wilson Woodson	
3	Anderson Atchison Brown Coffey Doniphan Douglas Franklin Geary Jackson	Jefferson Johnson Leavenworth Linn Lyon Marshall Miami Morris	Nemaha Osage Pottawatomie Riley Shawnee Wabaunsee Washington Wyandotte	

## **KENTUCKY**

ZONE	COUNTIES OF:			
1	All Counties except tho	se noted below.		
2	Allen Butler Christian Clay Clinton Cumberland Daviess Floyd Greenup Hancock Hopkins	Knott Knox Laurel Leslie Lewis Logan McCreary McLean Monroe Muhlenburg	Ohio Perry Pike Pulaski Russell Simpson Todd Warren Wayne Whitley	

## **KENTUCKY** (Cont'd.)

ZONE	COUNTIES OF:			
3	Bell Caldwell Calloway	Harlan Henderson Letcher	Trigg Union Webster	

	Crittenden	Lyon		
4	Graves Livingston	Marshall	McCracken	
5	Ballard Carlisle	Fulton	Hickman	

## **LOUISIANA**

ZONE	COUNTIES OF:
1	Entire State

#### MAINE

ZON	E	COUNTIES OF:
3		Entire State

#### **MARYLAND**

ZONE	COUNTIES OF:	
1	All Counties not listed below.	
2	Charles	St. Marys

#### **MASSACHUSETTS**

ZONE	COUNTIES OF:
3	Entire State

## **MICHIGAN**

ZONE	COUNTIES OF:			
1	Entire Counties except those noted below.			
2	Genesee Hillsdale Ingham Jackson Lapeer	Lenawee Livingston Macomb Monroe Oakland	Sanilac Shiawassee St Clair Washtenaw Wayne	

## **MINNESOTA**

ZONE	COUNTIES OF:
1	Entire State

#### **MISSISSIPPI**

ZONE	COUNTIES OF:			
1	All Counties except those noted below.			
2	Alcorn Benton Bolivar Calhoun Carroll Chickasaw Grenada Itawamba	Lafayette Lee Leflore Lowndes Monroe Montgomery Panola Pontotoc	Prentiss Quitman Sunflower Tallahatchie Tippah Tishomingo Union Yalobusha	
3	Coahoma	Marshall	Tate	
4	De Soto	Tunica		

#### **MISSOURI**

ZONE	COUNTIES OF:  All Counties except those noted below.			
1				
2	Audrain Bates Boone Caldwell Callaway Camden Christian Cole Dallas Daviess	Gasconade Gentry Johnson Laclede Lafayette Lincoln Maries Miller Montgomery Osage	Phelps Pike Pulaski Ralls Ray Taney Vernon Warren Webster Worth	
	DeKalb Douglas	Ozark	Wright	
3	Andrew Atchison Buchanan Cass Clay Clinton Crawford	Dent Franklin Holt Howell Jackson Nodaway Platte	Shannon St. Charles St. Louis St. Louis City Texas Washington	
4	Carter Iron Jefferson	Oregon Perry Reynolds	St. Francois Ste. Genevieve	

## MISSOURI (Cont'd.)

ZONE	COUNTIES OF:			
5	Bollinger	Madison	Ripley	
	Butler	Mississippi	Scott	
	Cape Girardeau	New Madrid	Stoddard	
	Dunklin	Pemiscot	Wayne	

## **MONTANA**

ZONE	COUNTIES OF:			
1	All Counties except those noted below.			
2	Glacier Golden Valley Judith Basin	Lincoln Mineral	Pondera Ravalli	
3	Broadwater Cascade Deer Lodge Flathead Granite	Jefferson Lake Lewis and Clark Meagher Missoula	Powell Sanders Silver Bow Teton Wheatland	
5	Stillwater	Sweet Grass		
7	Beaverhead Gallatin	Madison	Park	

#### **NEBRASKA**

ZONE	COUNTIES OF:				
1	All Counties except those noted below.				
2	Boone Box Butte Burt Butler Cedar Cherry Clay Colfax Cuming Dakota Dawes Dixon	Dodge Douglas Fillmore Hamilton Knox Madison Merrick Nance Nuckolls Pierce Platte	Polk Saline Saunders Seward Sheridan Sioux Thayer Thurston Washington Wayne York		
3	Cass Gage Jefferson Johnson	Lancaster Nemaha Otoe	Pawnee Richardson Sarpy		

#### **NEVADA**

ZONE	COUNTIES OF:		
3	Clark	Elko	White Pine
4	Eureka	Lincoln	
5	Douglas	Humbolt	
6	Carson City	Storey	
7	All Counties except th	nose noted above.	

#### **NEW HAMPSHIRE**

ZONE	COUNTIES OF:
3	Entire State

## **NEW JERSEY**

ZONE	COUNTIES OF:			
1	Atlantic	Cape May	Cumberland	
2	Burlington Camden	Gloucester Ocean	Salem	
3	All Counties except th	ose noted above.		

#### **NEW MEXICO**

ZONE	COUNTIES OF:			
1	All Counties except th	ose noted below.		
2	Chaves Colfax Dona Ana Guadalupe	Lincoln Luna McKinley Mora	Otero San Juan San Migual	
3	Bernalillo Catron Cibola Grant Hidalgo	Los Almos Rio Arriba Sandoval Santa Fe Sierra	Socorro Taos Torrance Valencia	

## **NEW YORK**

ZONE	COUNTIES OF:			
1	Chemung Schuyler	Seneca Steuben	Tompkins Yates	
2	Allegany Broome Cattaraugus Cayuga Chautaugua	Chenango Cortland Livingston Madison Monroe	Onondaga Ontario Oswego Tioga Wayne	

## NEW YORK (Cont'd.)

ZONE	ONE COUNTIES OF:	
3	All Counties except those noted above.	

#### **NORTH CAROLINA**

ZONE	COUNTIES OF:			
1	All Counties except tho	se noted below.		
2	Bladen Brunswick Chatham Columbus Cumberland Davidson Davie Forsyth	Guilford Harnett Hoke Lee Montgomery Moore New Hanover Pender	Randolph Robeson Rockingham Sampson Scotland Stokes Yadkin	
3	Alexander Alleghany Anson Ashe Avery Buncombe Burke Cabarrus Caldwell Catawba Cherokee Clay Cleveland	Gaston Graham Haywood Henderson Iredell Jackson Lincoln Macon Madison McDowell Mecklenburg Mitchell	Polk Richmond Rowan Rutherford Stanly Surry Swain Transylvania Union Watauga Wilkes Yancey	

#### **NORTH DAKOTA**

ZONE	COUNTIES OF:
1	Entire State

#### OHIO

ZONE	COUNTIES OF:
2	Entire State

## **OKLAHOMA**

ZONE	COUNTIES OF:
1	Cimarron
2	All Counties except those noted above and below.

## OKLAHOMA (Cont'd.)

ZONE	COUNTIES OF:			
3	Atoka	Johnston	Okfuskee	
	Bryan	Latimer	Oklahoma	
	Carter	Le Flore	Okmulgee	
	Choctaw	Lincoln	Pittsburg	
	Cleveland	Marshall	Pontotoc	
	Coal	McClain	Pottawatomie	
	Creek	McCurtain	Pushmataha	
	Garvin	McIntosh	Seminole	
	Grady	Murray	Stephens	
	Haskell	Muskogee	Tulsa	
	Hughes	Ğ		

## **OREGON**

ZONE	COUNTIES OF:			
1	Coos	Douglas	Lane	
	Crook	Grant	Malheur	
	Deschutes	Jefferson	Wheeler	
2	All Counties except th	ose noted above.		

#### **PENNSYLVANIA**

ZONE	COUNTIES OF:			
1	All Counties except tho	se noted below.		
2	Bradford Columbia Crawford Cumberland Dauphin Delaware Erie	Juniata Lycoming Mercer Montour Northumberland Perry Philadelphia	Snyder Sullivan Union Warren York	
3	Berks Bucks Carbon Chester Lackawanna Lancaster	Lebanon Lehigh Luzerne Monroe Montgomery Northampton	Pike Schuylkill Susquehanna Wayne Wyoming	

#### **RHODE ISLAND**

ZONE	COUNTIES OF:
3	Entire State

## **SOUTH CAROLINA**

ZONE	COUNTIES OF:
3	Entire State

#### **SOUTH DAKOTA**

ZONE	COUNTIES OF:			
1	All Counties except those noted below.			
2	Bennett Clay Custer Fall River	Jackson Mellette Pennington Shannon	Todd Union Yankton	

#### **TENNESSEE**

ZONE	COUNTIES OF:			
2	All Counties except those noted below.			
3	Anderson Bledsoe Blount Bradley Cambell Carroll Carter Claiborne Cocke Cumberland Grainger Greene Hamblen	Hamilton Hancock Hardeman Hawkins Henry Jefferson Johnson Knox Loudon Madison McMinn Meigs	Monroe Morgan Polk Rhea Roane Scott Sequatchie Sevier Sullivan Unicoi Union Washington	
4	Crockett Fayette	Gibson Haywood	Weakley	
5	Dyer Lake	Lauderdale Obion	Shelby Tipton	

#### **TEXAS**

ZONE	COUNTIES OF:			
1	All Counties except those noted below.			
2	Bowie Carson Clay Collin Collingsworth Cooke Delta Denton Donley Fannin	Franklin Gray Grayson Hansford Hemphill Hopkins Hunt Hutchinson Lamar Lipscomb	Montague Moore Ochiltree Red River Roberts Sherman Titus Wheeler Wichita Wise	

## UTAH

ZONE	COUNTIES OF:			
2	Daggett Grand	Kane San Juan	Uintah	
3	Carbon Duchesne Emery	Garfield Piute	Washington Wayne	
4	Beaver	Iron		
5	All Counties except the	nose noted above.		

## **VERMONT**

ZONE	COUNTIES OF:
3	Entire State

## **VIRGINIA**

ZONE	COUNTIES OF:			
1	Alexandria Alexandria City Arlington Brunswick Clarke Fairfax Fairfax City	Falls Church City Frederick Greensville Isle of Wight Loudoun Mecklenburg Norfolk	Portsmouth Shenandoah Southampton Suffolk Sussex Virgina Beach Warren	
2	All Counties except thos	se noted above and below.		
3	Bland Buchanan Carroll Craig Dickenson Floyd Giles	Grayson Lee Montgomery Pulaski Roanoke Russell	Scott Smyth Tazewell Washington Wise Wythe	

## **WASHINGTON**

ZONE	COUNTIES OF:			
1	Asotin Garfield	Lincoln Pend Oreille	Stevens Whitman	
2	Adams Benton Columbia	Franklin Klickitat	Spokane Walla Walla	
3	Clark Cowlitz Douglas Ferry	Grant Grays Harbor Lewis Pacific	Skamania Wahkiakum Yakima	
5	All Counties except those noted above.			

#### **WEST VIRGINIA**

ZONE	COUNTIES OF:			
1	All Counties except those noted below.			
2	Fayette Greenbrier Logan	Mingo Pocahontas	Raleigh Wyoming	
3	McDowell Mercer	Monroe	Summers	

#### **WISCONSIN**

ZONE	COUNTIES OF:
1	Entire State

#### **WYOMING**

ZONE	COUNTIES OF:			
1	Big Horn Crook	Sheridan	Washakie	
2	All Counties except those noted above and below.			
4	Lincoln	Sublette	Uinta	
5	Fremont	Park	Teton	

## **U.S. POSSESSIONS**

	ZONE	COUNTIES
GUAM	6	Entire Territory
PUERTO RICO"	5	Entire Territory
TUTIULA	5	Entire Territory
VIRGIN ISLANDS***	6	Entire Territory

<sup>&</sup>quot;The islands Isla de Culebra and Isla de Viegues are part of Puerto Rico.

The Virgin Islands consist of St. Thomas (U.S.), St. Johns (U.S.), Tortola (U.K.), Virgin Gorda (U.K.) and St. Croix (U.S.). Anegada (U.K.) is also considered to be in Earthquake Zone 6.

## **ALASKA HAZARD ZONE MAP**

