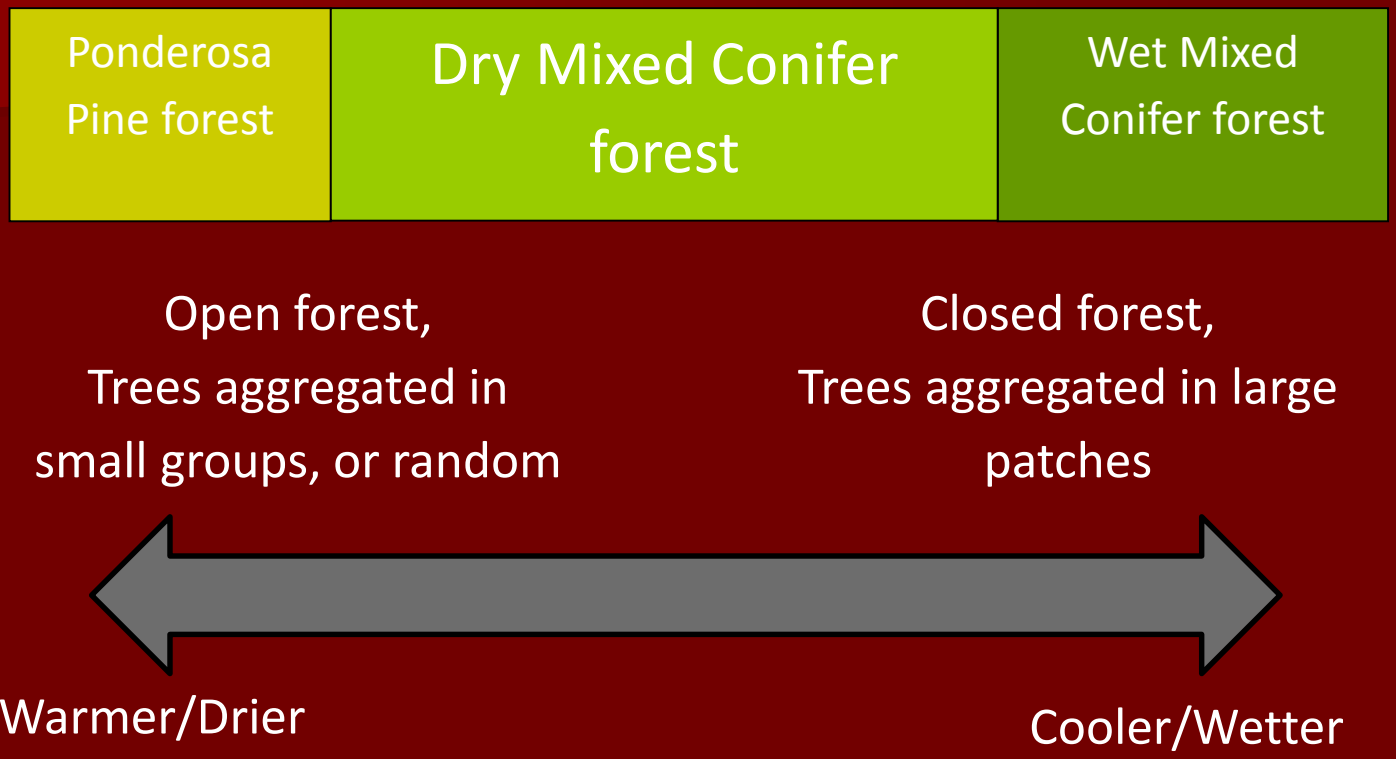

DESIRED CONDITIONS
DIALOGUE
Dry Mixed Conifer Workshop
October 2016
Lincoln NF

# OBJECTIVES

- Describe dry mixed conifer forests (classification)
- Begin a dialogue on desired forest conditions to develop a common understanding and a framework for shared learning
- Describe desired conditions for dry mixed conifer forests
- Describe links between desired conditions and ecological restoration
- Discuss use of desired conditions as a target and measure of success

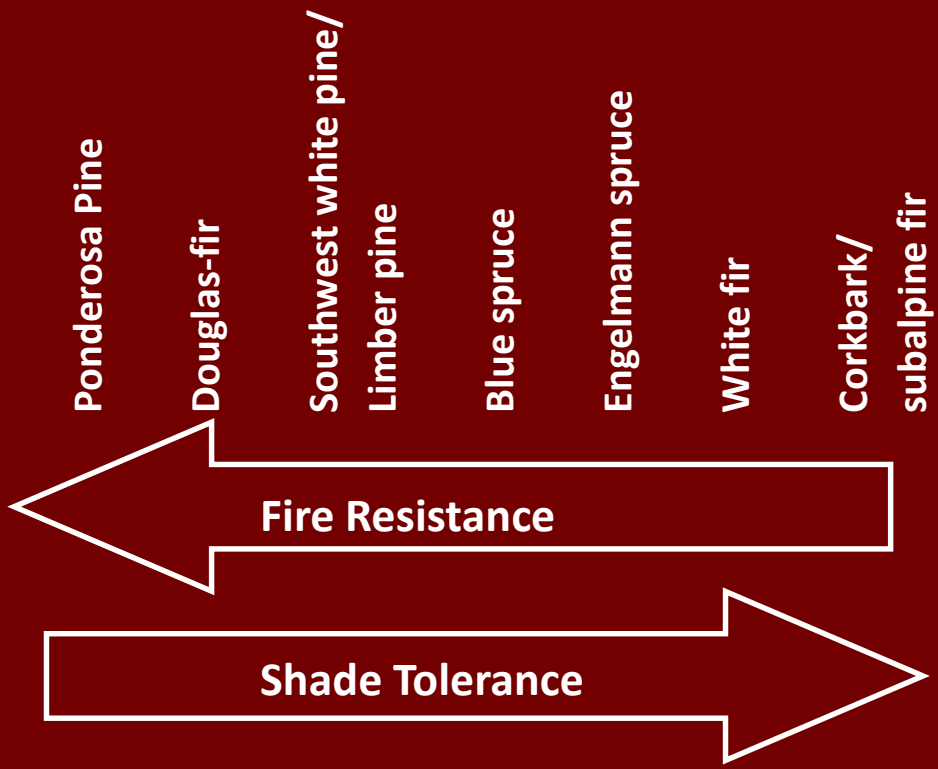
# Montane Forest Characteristics



# Mixed Conifer Forest Classification

| Forest Type (sub-type) | Fire Regime | | Fire Type | Forest Structure | Seral Species | Climax Species |
|---|---|---|---|---|---|---|
| | Fire Frequency | Fire Severity | | | | |
| Dry mixed-conifer (warmer/drier) | Regime I (common) 0-35 years | Low | Surface | Uneven-aged, grouped, open | Dominant: ponderosa pine Subdominant: aspen and/or oak (in sub-stand scale patches) | Shade-intolerant species under fire dis-climax historic conditions. Dominant: ponderosa pine Subdominant: Douglas-fir and Southwestern white pine or limber pine |
| | Regime III (rare) 35-100+ years | Mixed | Mixed | Uneven-aged, patched, open | | |
| Wet mixed-conifer (cooler/wetter) | Regime III (common) 35-100+ years | Mixed | Mixed | Uneven-aged, patched, closed | Dominant (depending on habitat type): aspen or Douglas-fir | Shade tolerant species. Dominant (depending on habitat type): white fir and/or blue spruce |
| | Regime IV (rare) 35-100+ years | High | Stand-replacing | Even-aged, closed | | |

# Relative shade and fire tolerance of common conifer tree species in mixed conifer and spruce-fir forests



# Development of R3 Desired Conditions

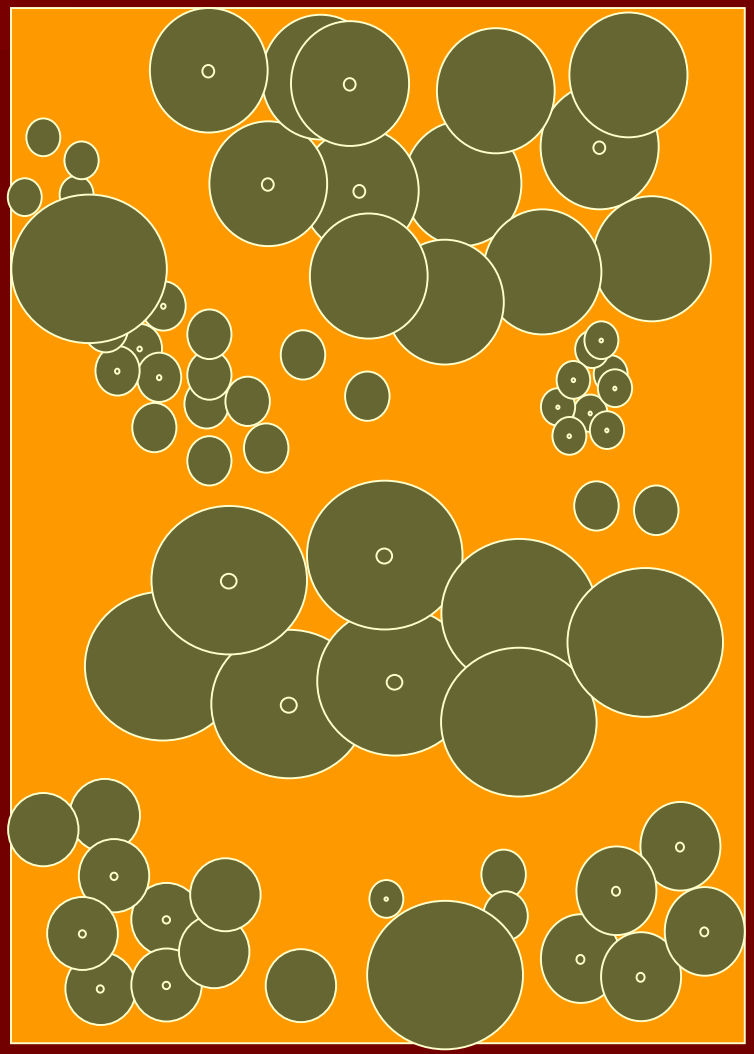
- History of development
  - DC developed for Forest Plan Revision
  - Iterative and adaptive process
- DCs guide project level development
- Based on best available science for forest ecology, wildlife ecology, natural range of variability, etc.

# Desired Conditions: key elements

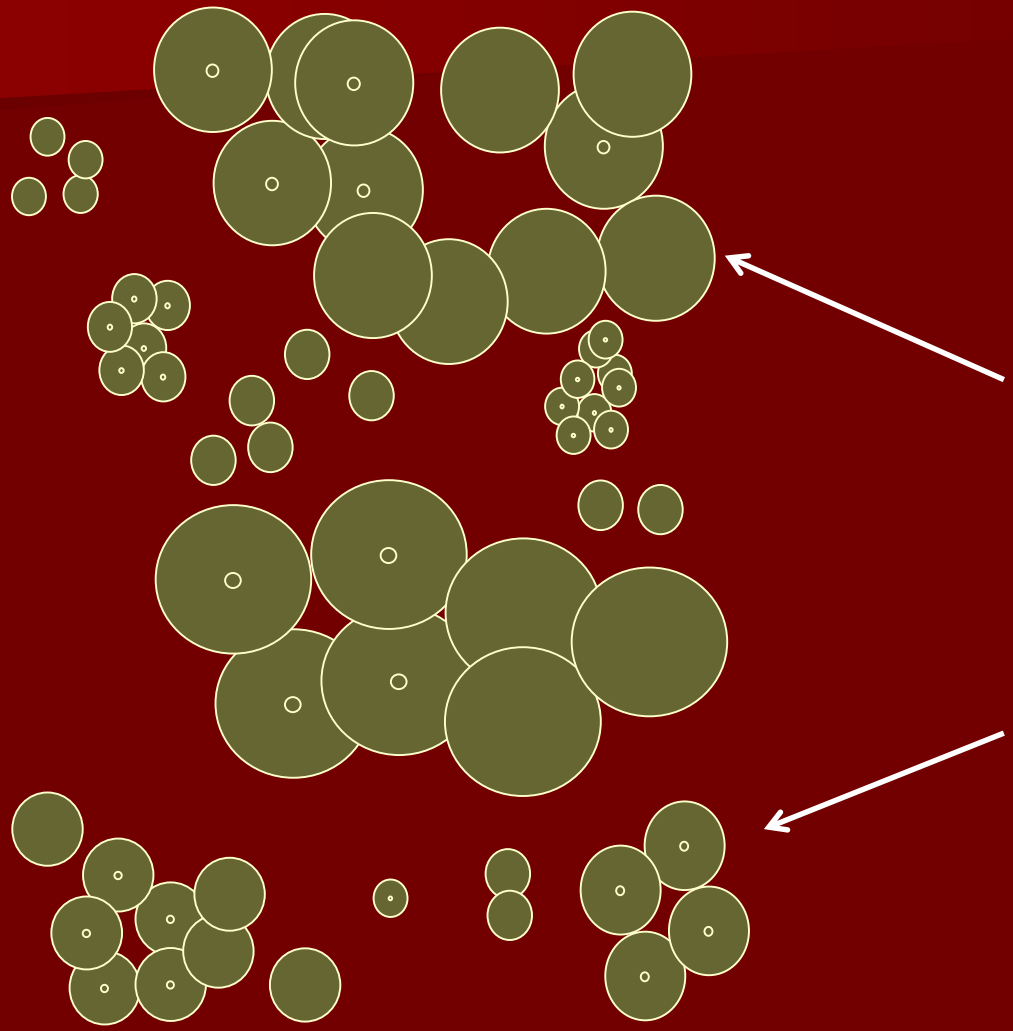
- Tree species and age composition
  - Composition & sustaining a tree age balance
  - Spatial characteristics of forests
  - Tree groups: size, density, arrangement
  - Interspace: composition, size, arrangement
- Processes and Functions
  - Biological diversity, foodwebs, hydrologic processes, nutrient recycling, etc.
  - Disturbances (fire, insects, disease, windthrow) at natural frequencies and levels

# Spatial and Age Characteristics

- Trees grouped with interlocking crowns
- Interspace between tree groups
- All age classes and as much old forest as is ecologically sustainable
- High interspersion of age classes



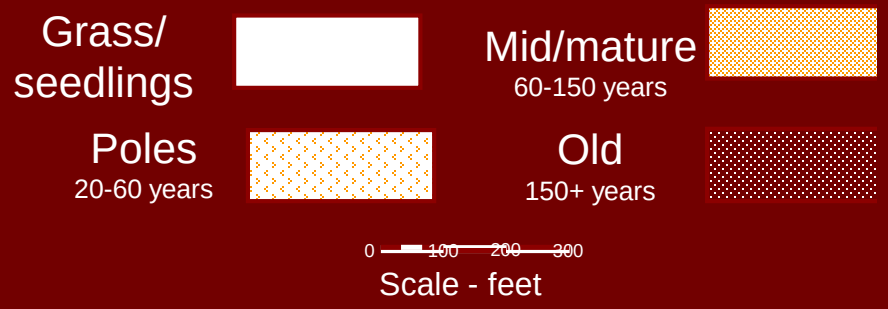
# Tree group size and variability



Group size ranges from a few trees to 1+ acre in size. Highly variable based on site conditions.

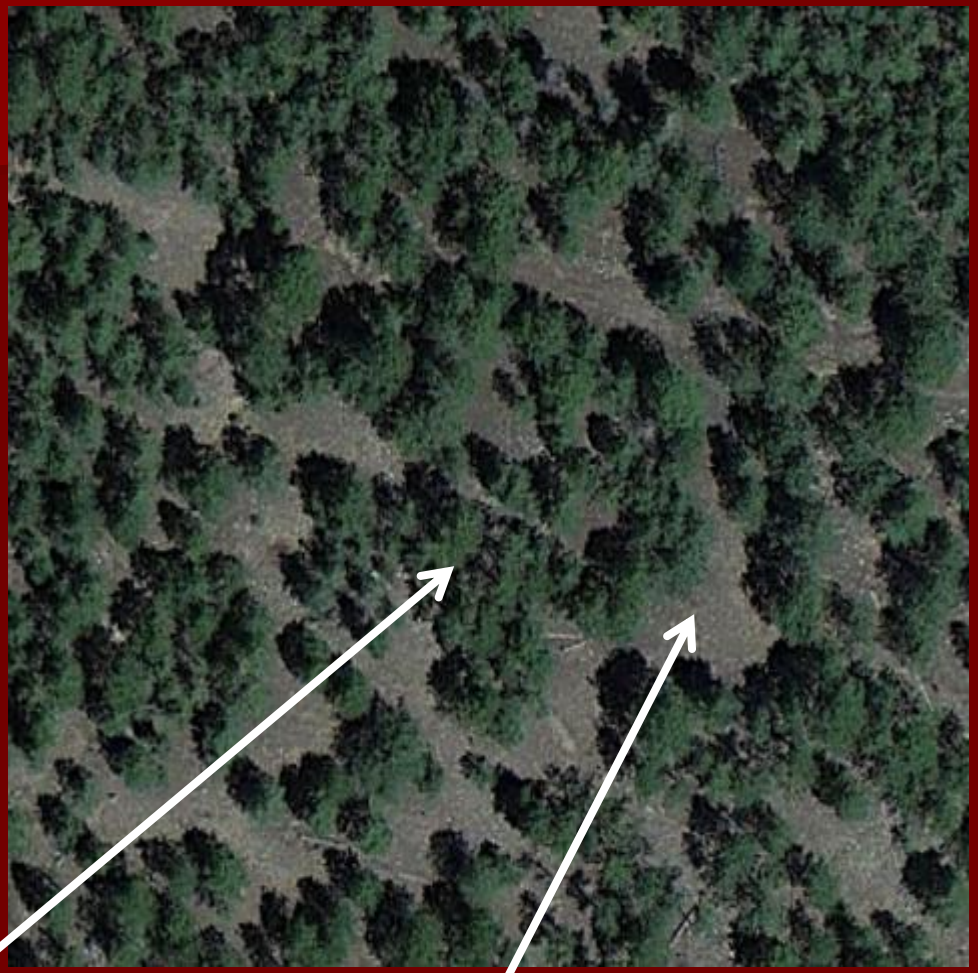
# Spatial and Age Characteristics

## Conceptual uneven-aged mosaic




# Desired Forest Conditions

# Openness and Variability



Area under tree cover

Interspace grass/forb/shrub

North-facing slope example:

About 30-40% of area is open grass/ forb/ shrub interspace

About 60-70% of area is under mid-old tree cover

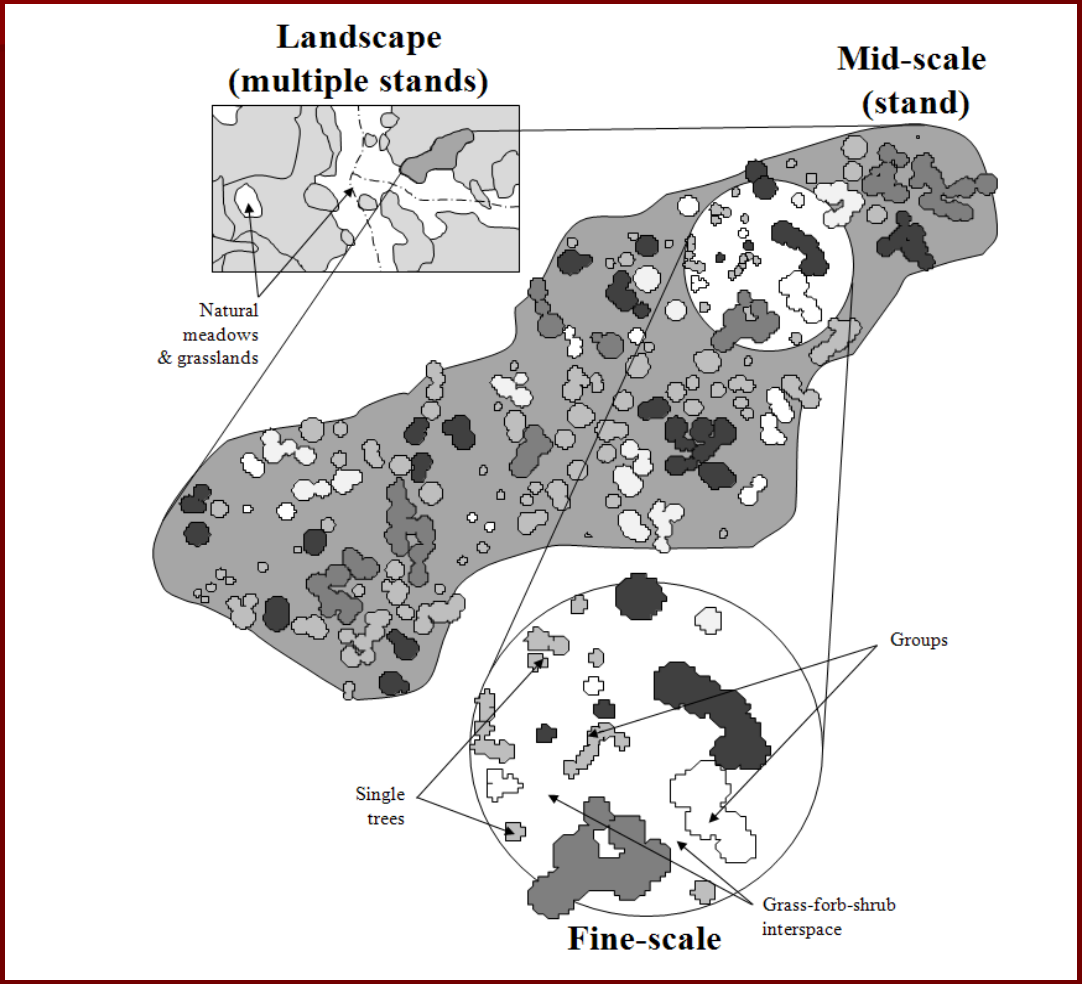
# Openness and Variability

South-facing slope example:

About 40-60% of area is open grass/ forb/ shrub interspace

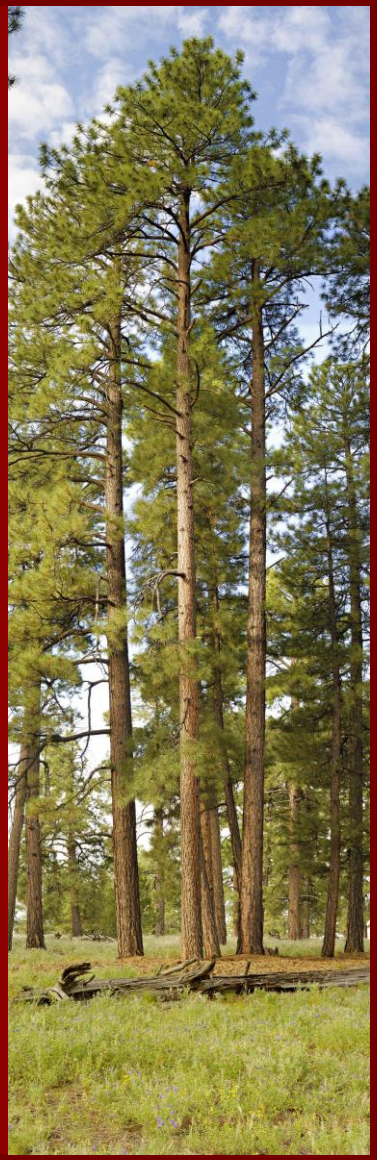
About 40-60% of area is under mid-old tree cover

# Conceptualized forest reference condition at three spatial scales



# Spatial Characteristics

Trees grouped with interlocking crowns



# Spatial Characteristics
## Interspace between tree groups

# Tree Age

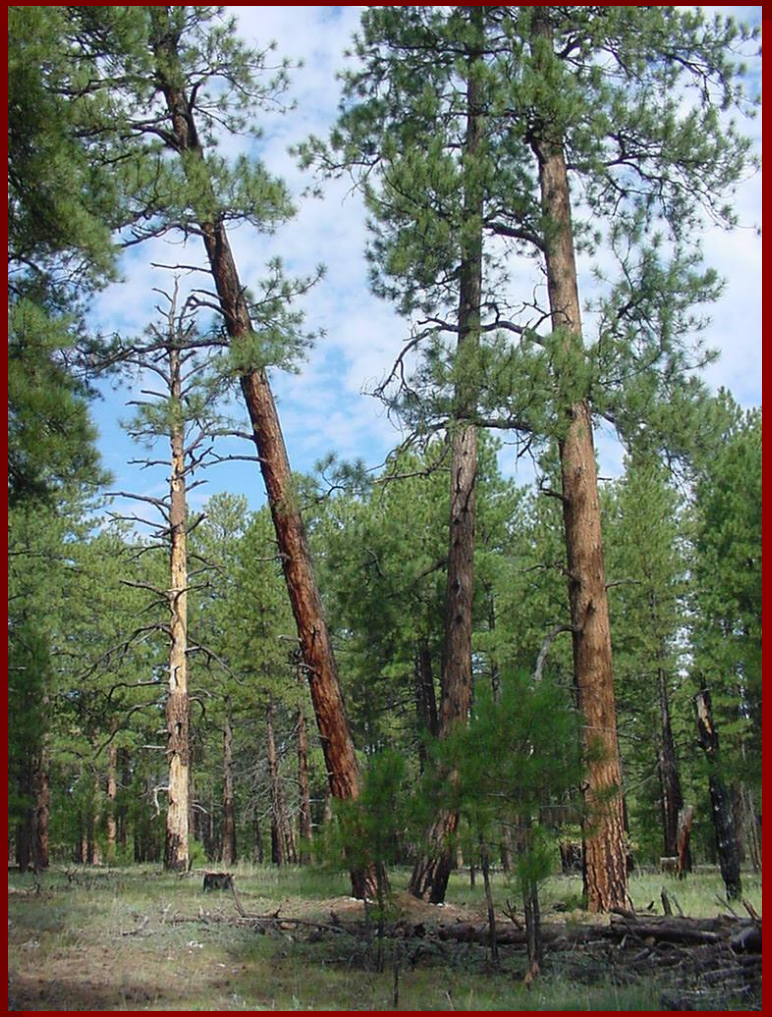
All age classes and

as much old forest as is ecologically sustainable

# Age and Function

## Large tree components

- Big trees
- Snags
- Logs
- Woody debris



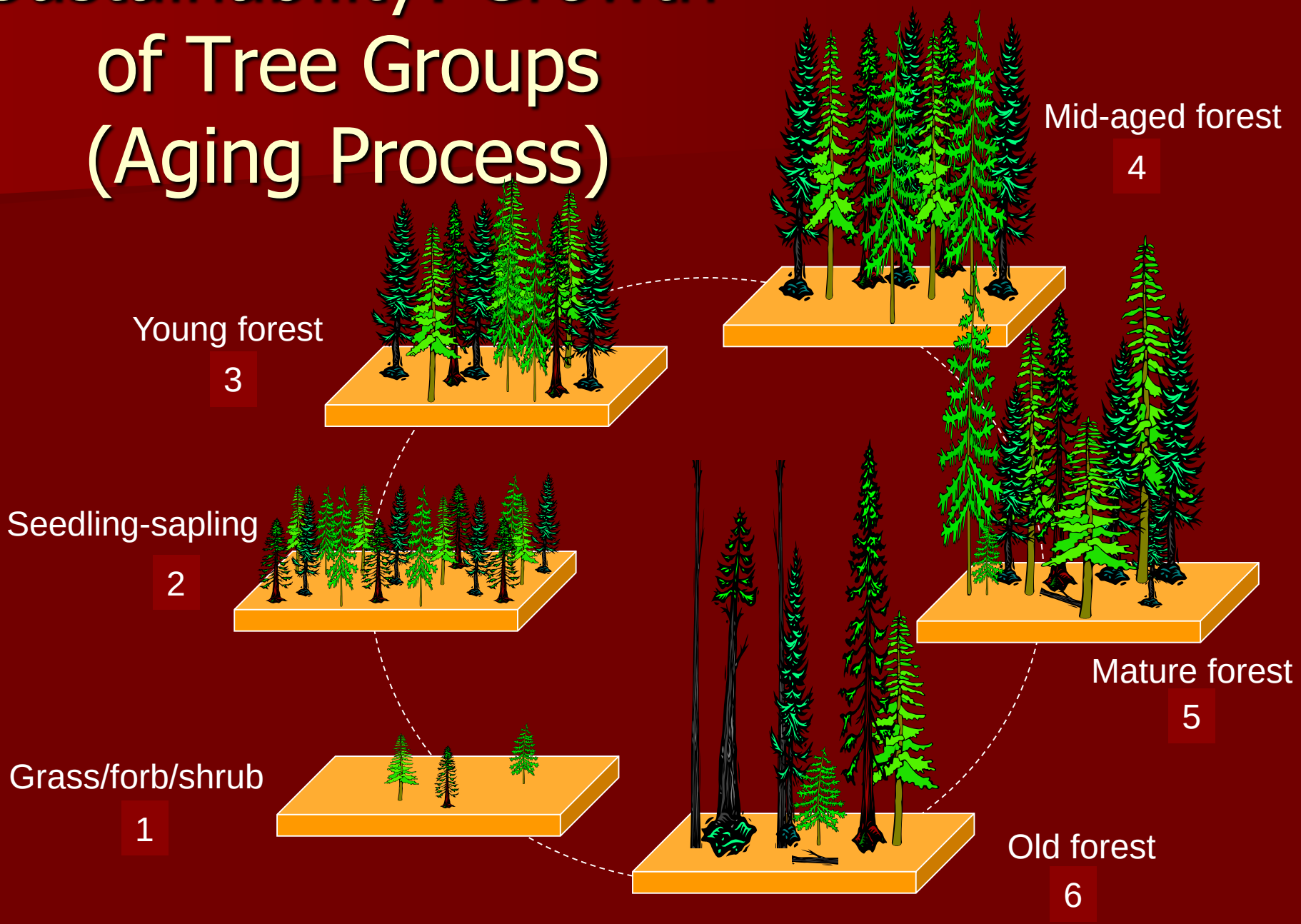
# Composition and Function

Grass/forb/shrub Interspace

# Processes

- Frequent surface fire
  - 5 to 10 yrs ponderosa pine
  - 7 to 35 yrs dry MC

# Sustainability: Growth of Tree Groups (Aging Process)



# Concepts

- Desired Conditions are a work in progress
  - Will be adapted to new science/information
- Desired Condition characteristics are presented in ranges, not single targets, to account for variability across most of a landscape. For dry MC:
  - Percent of area general openness, generally 50+% (less on some sites, ranges from 30-60%)
  - Typically 40 to 125 sq ft/BA per acre
  - Generally 8 to 16 tons woody debris per acre
- Desired Condition at three scales
  - Landscape
  - Mid scale
  - Fine scale

# Links between desired conditions and ecological restoration

- The Desired Conditions fall within natural historic conditions
- Natural conditions are a good example of functioning, sustainable, and resilient ecosystems
- Attaining the Desired Conditions will achieve restoration objectives

# Challenges

- Desired Conditions may not be attainable in a single treatment
- Operational feasibility (funding, workforce, industry capacity, etc.) may constrain our ability to achieve desired conditions everywhere
- Necessitates prioritizing landscapes and strategies for achieving desired conditions
- Maintenance of desired conditions

# Outcomes of Desired Conditions

- Reduced severity of fire effects
- Reduced fire hazards and increased flexibility for managing fires
- Increased resilience to climate variability and change, insects, disease

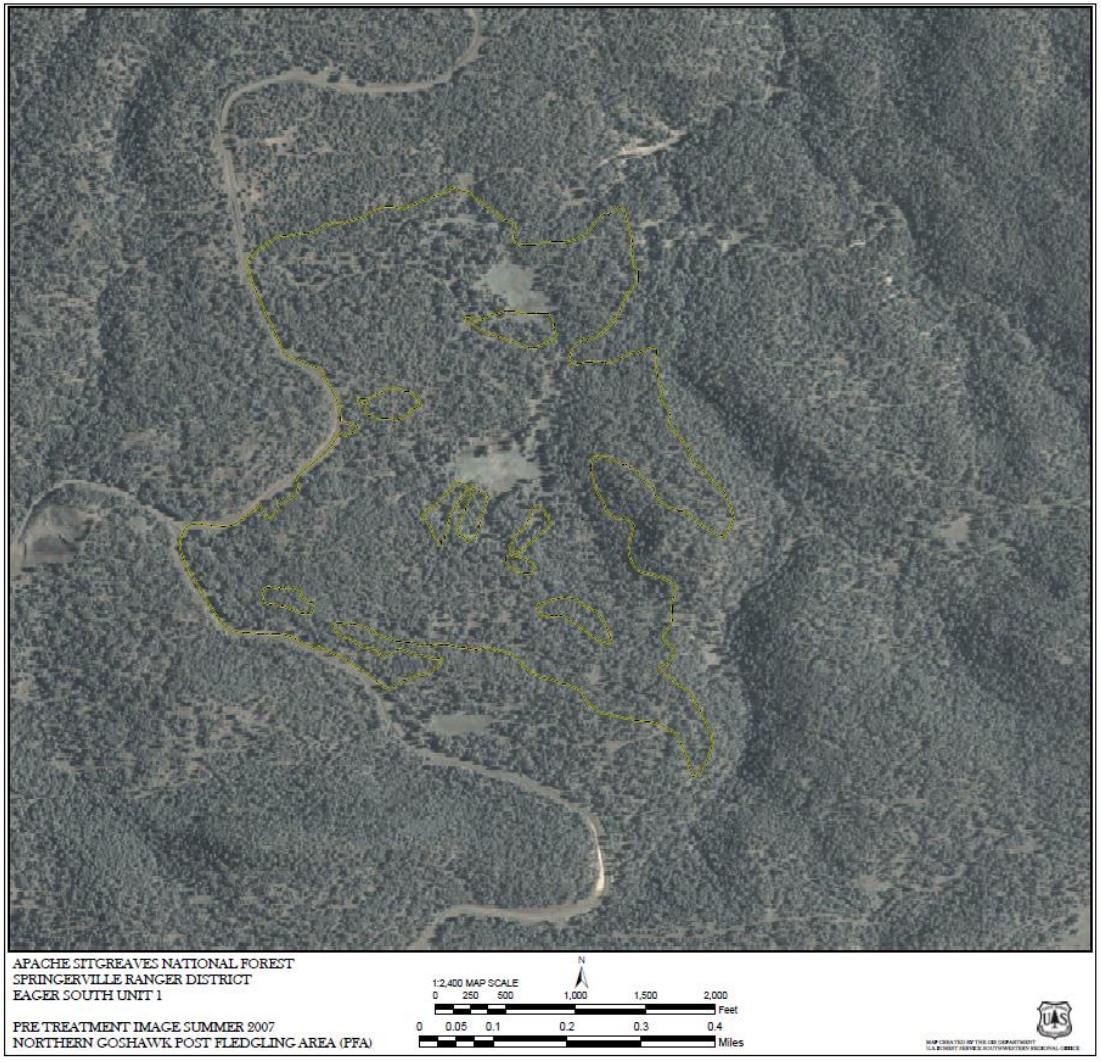
# Outcomes (cont)

- Sustainable old growth condition
- Restored hydrologic function
- Sustainable wood supply
- Improved forage production
- Enhanced visual quality
- Improved plant and animal habitat, biodiversity, foodwebs

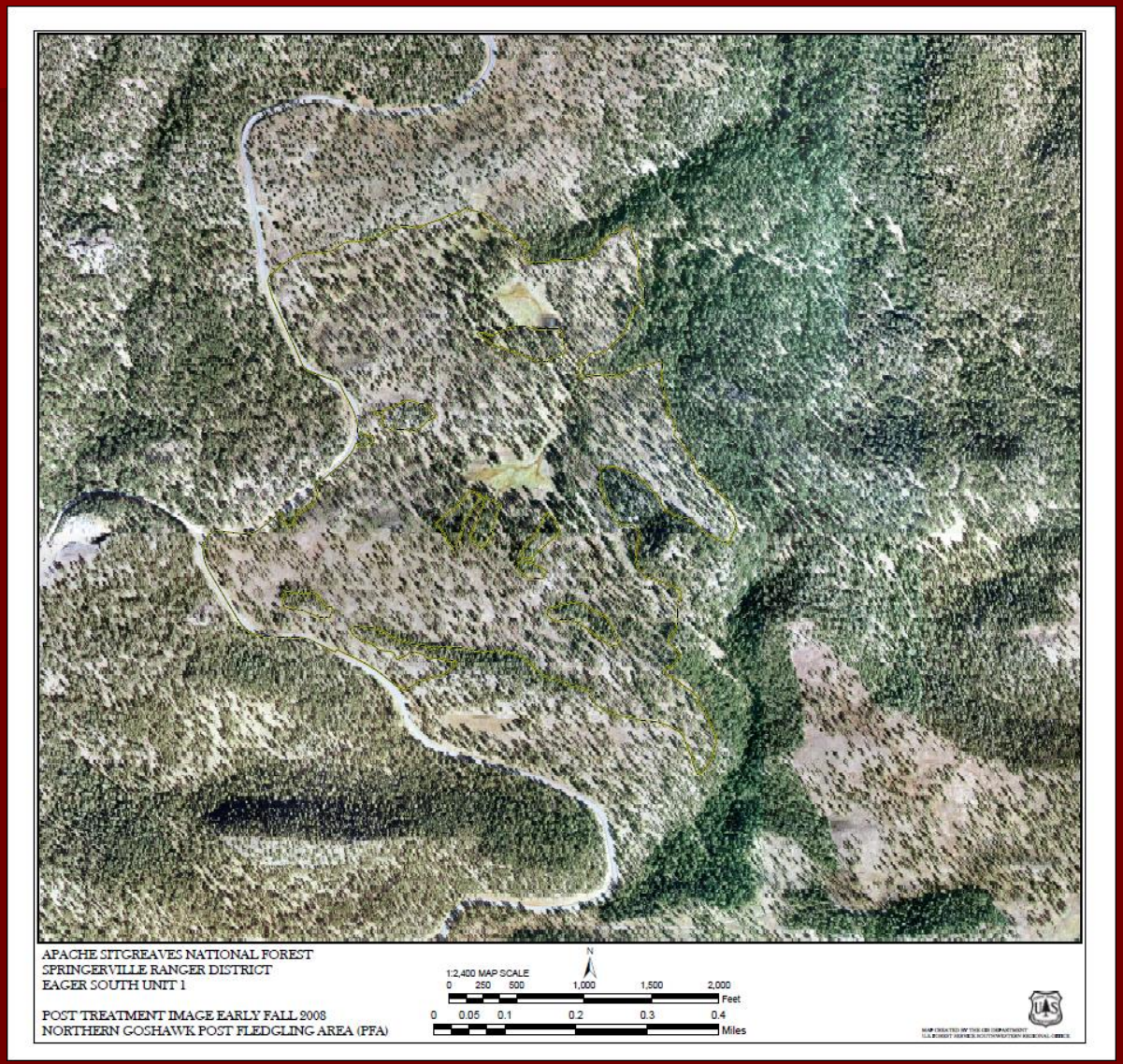
# Desired conditions and resiliency


**Pre-fire treatment (Fort Apache I.R.)**
**(one week after Rodeo-Chediski Wildfire)**

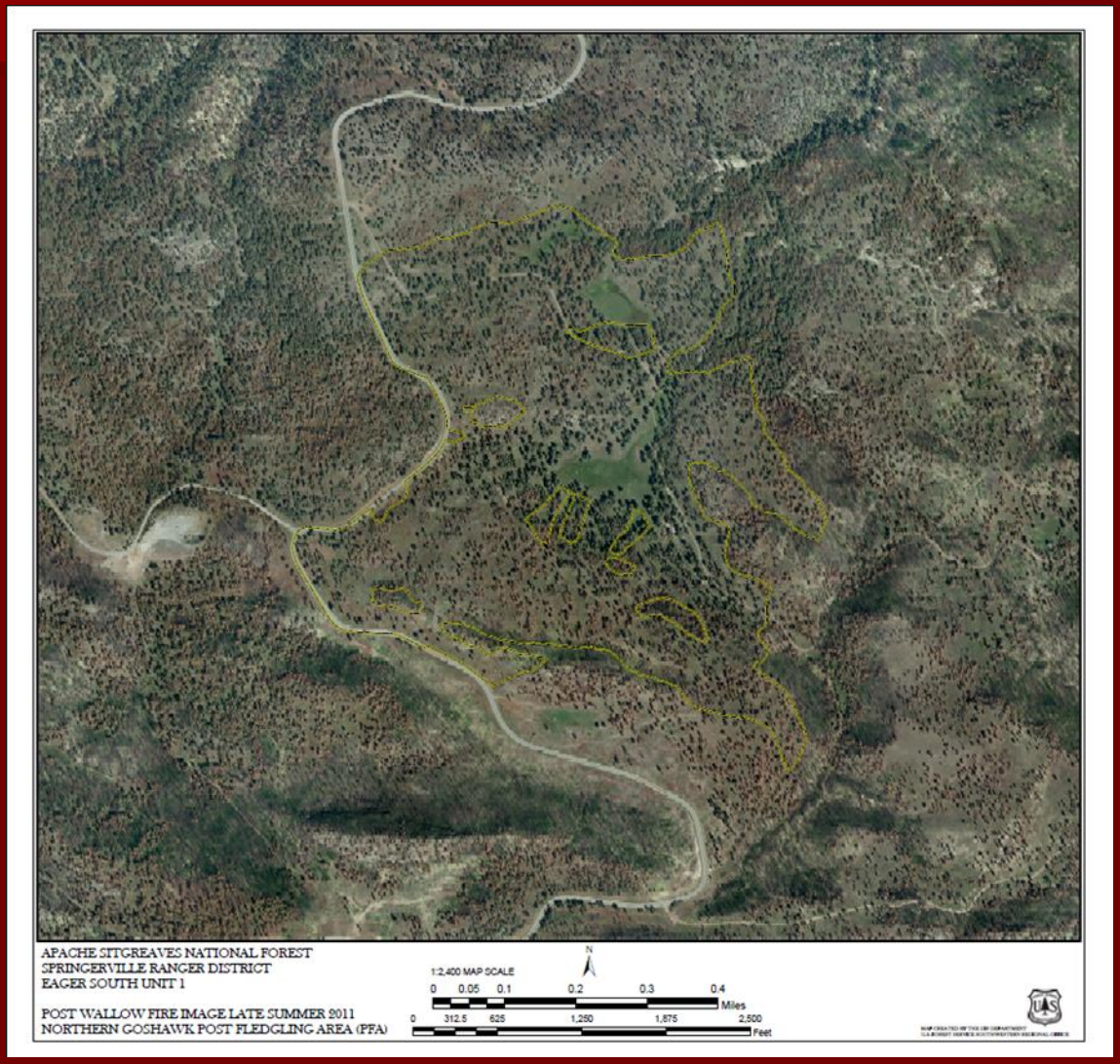
# Eagar South Project, example 1:
## Pre Treatment



# Eagar South Project, example 1:
## Post Treatment



# Eagar South Project, example 1:
## Post Wallow Fire



# Eagar South Project, example 2: Pre Treatment

# Some References


- Reynolds, R.T., A. Sánchez Meador, J.A. Youtz, T. Nicolet, M.S. Matonis, P.L. Jackson, D. Delorenzo, and A.D. Graves. 2013. Restoring composition and structure in southwestern frequent-fire forests: a science-based framework for improving ecosystem resiliency. RMRS-General Technical Report -310.

- Evans, A. M., R.G. Everett, S.L. Stephens, and J.A. Youtz. 2011. Comprehensive Fuels Treatment Practices Guide for Mixed Conifer Forests: California, Central and Southern Rockies, and the Southwest.

- USDA Forest Service, Southwestern Region. 2013. Desired Conditions for Ecosytem Restoration in the Southwestern Region: Development and Science Basis. Unpublished white paper on file.

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