Utility Arboriculture

Technical Services

Overview

Utility Arboriculture

- *Utility Pruning*
  - *ANSI Standards*
  - *Utility Arboriculture Best Practices*

Customer Relations

- *First Impressions*
- *Active Listening*
- *Frequently Asked Questions*
- *Handing Difficult Situations*

- *There is lots to talk about*
- *Ask questions and participate!*

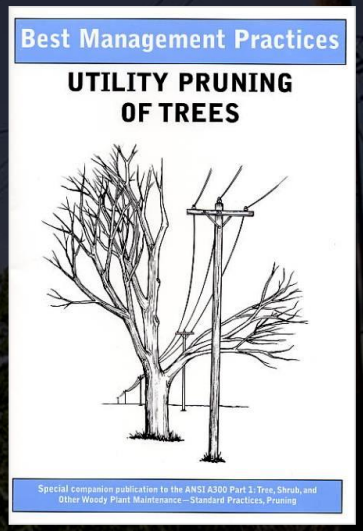
Technical Services

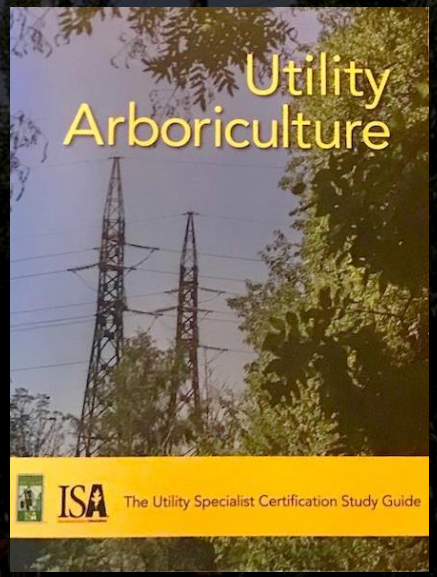
- Training, workshops and presentations
  - Best Practices
  - Utility Arboriculture
  - IVM
  - Public Relations
- Research and development projects
- Articles and white papers
- Industry involvement – ISA, TREE Fund, TCIA, ANSI, VM Associations
- New products, opportunities and trends
- Expert witness and consulting
- Environmental regulations and compliance

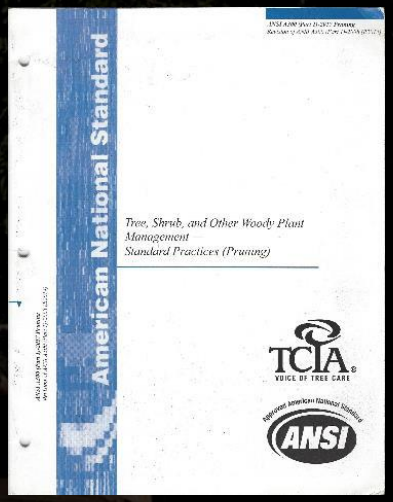
Background

Geoff Kempter

- 30 years in the business
- Author:
  - ISA Utility Pruning Best Practices
  - Utility Arboriculture, A Study Guide for the ISA Utility Specialist Exam
- 20 years on the ANSI A300 Committee







Is your work important?

Utility arboriculture is a vital service

However…

- Many people don't understand what we do
  - *Value of utility arboriculture*
  - *Complexity of our work*

Are trees a good thing?

- Trees are a vital asset to our communities…

And…

Trees are a major threat to the safety and reliability of overhead utility service

Rob

Value of Utility Arboriculture

- Has your work prevented power outages?
- Fires?
- How much is that work worth?
  - To SDG&E?
  - To the communities, businesses and homeowners we serve?

➢ *Our service is greatly undervalued!*

Trees fail…
With consequences!

Cost of power outages in the US:

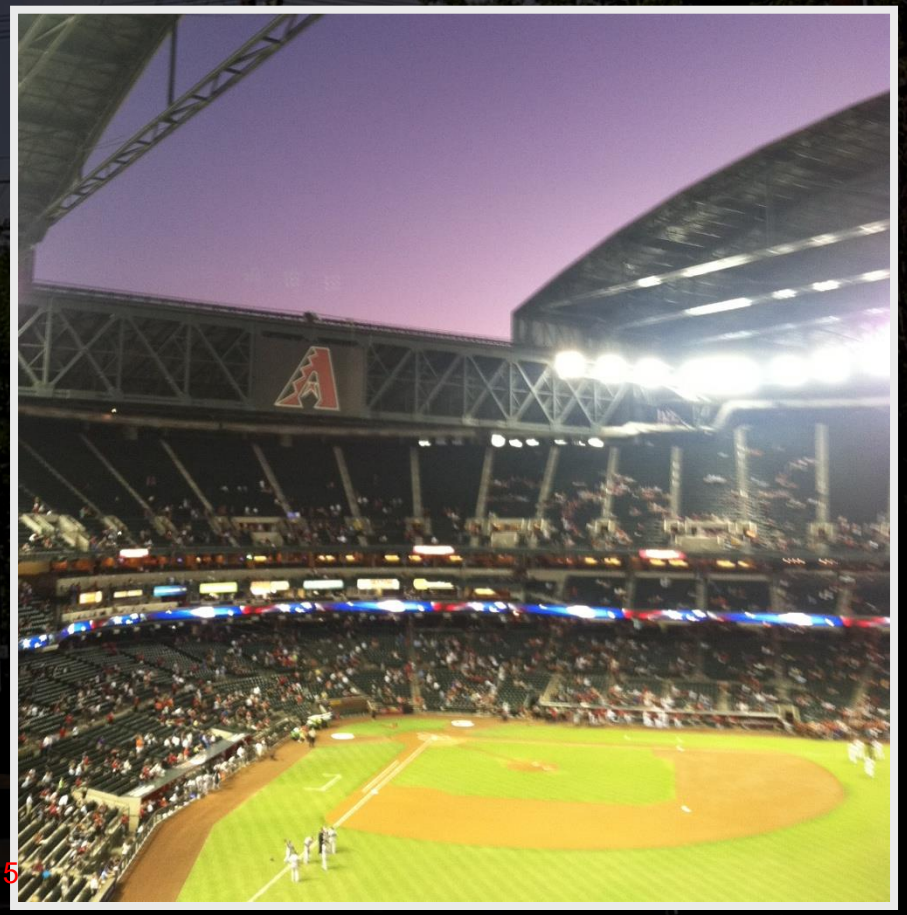
- **$100 billion or more**

(U.S. Government)

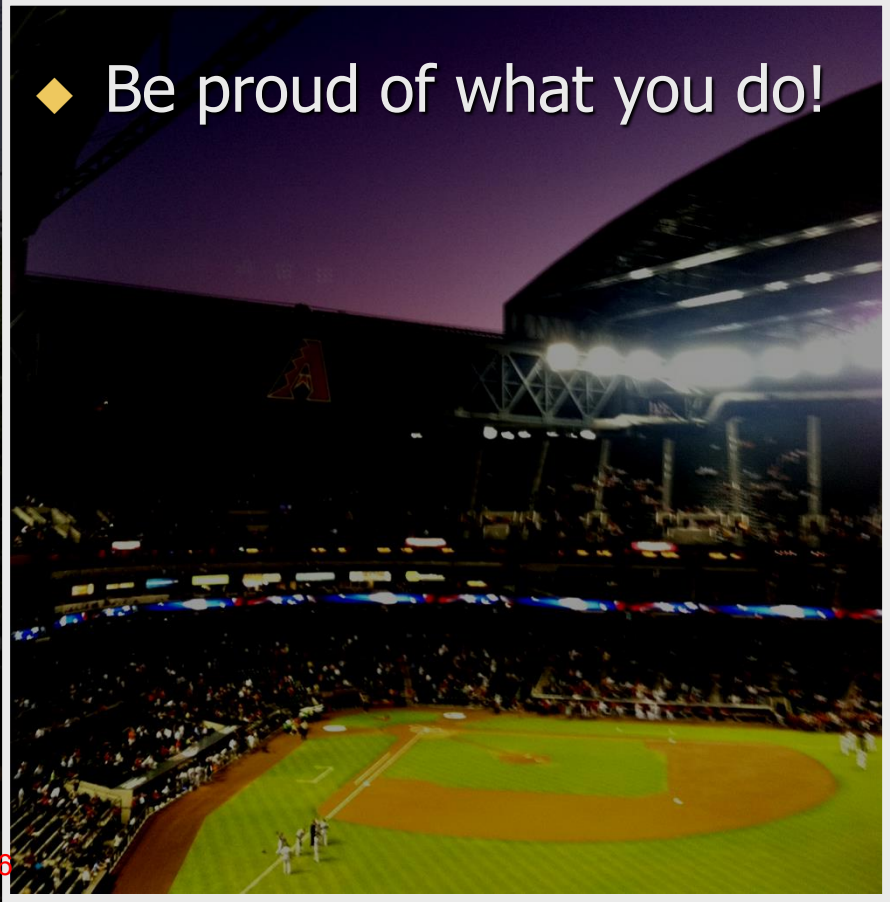
- *At least half of this is due to trees!*
- Many outages and fires are prevented by our work!

Your work makes modern life possible!

Miami Herald



Your work makes modern life possible!



- Be proud of what you do!

Professional

- "A person who does a job that requires special training, education or skill…"
- "Someone with specialized experience or skill in a particular job or activity…"

  - *Does this describe you?*

- *What do you expect from professionals who you deal with?*

What do you expect from Medical Professionals?

- Know what they are doing!
  - Knowledge and experience
- Communicate
  - Answer questions and explain
  - Be friendly
- Have integrity – no BS!
- Look the part
- There when you need them

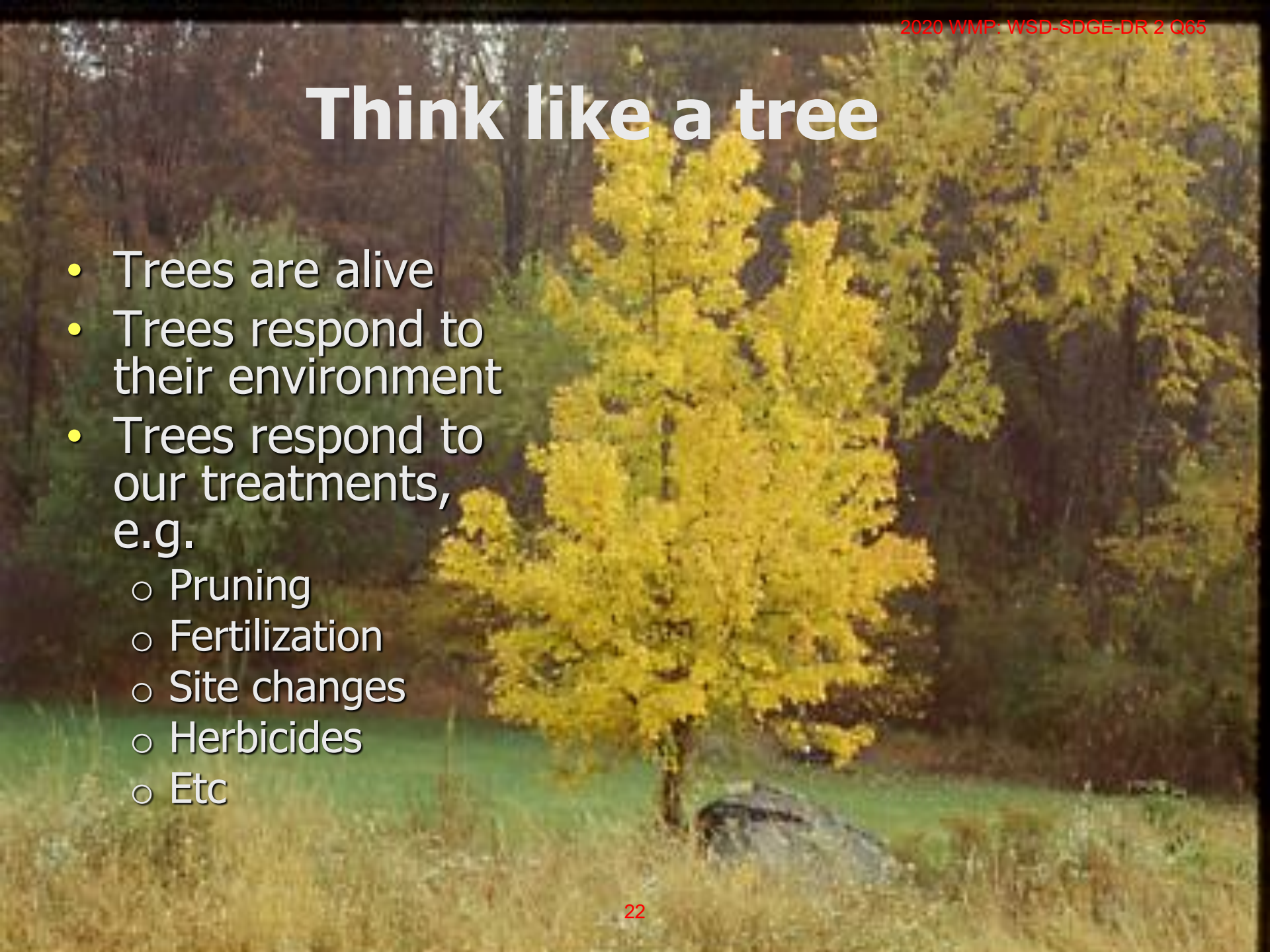
You are Professionals

- Knowledge and Experience:
  - *You know this business, and you make good decisions.*
- Communication:
  - *Listen to customer. Be confident, show respect, make eye contact, and explain our work.*
- Integrity:
  - *Be honest and courteous. Follow up on your commitments – everybody's credibility is on the line!*
- Appearance:
  - *Look credible. People judge by what they see.*
- Attitude:
  - *None of this matters without a positive approach.*
- There when you are needed

Atlanta

El Cajon

Think like a tree



- Trees are alive
- Trees respond to their environment
- Trees respond to our treatments, e.g.
  - Pruning
  - Fertilization
  - Site changes
  - Herbicides
  - Etc

Sometimes plants behave badly…

But it's usually because we treated them poorly!

Trees are stuck where they are

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25

Some trees grow REALLY FAST
Some trees are not what they appear to be

Trees compete for space

- With other trees…

And with our infrastructure

- Both above and below ground

Trees are opportunistic

STOP
STOP

What does a cleared ROW represent to a tree?

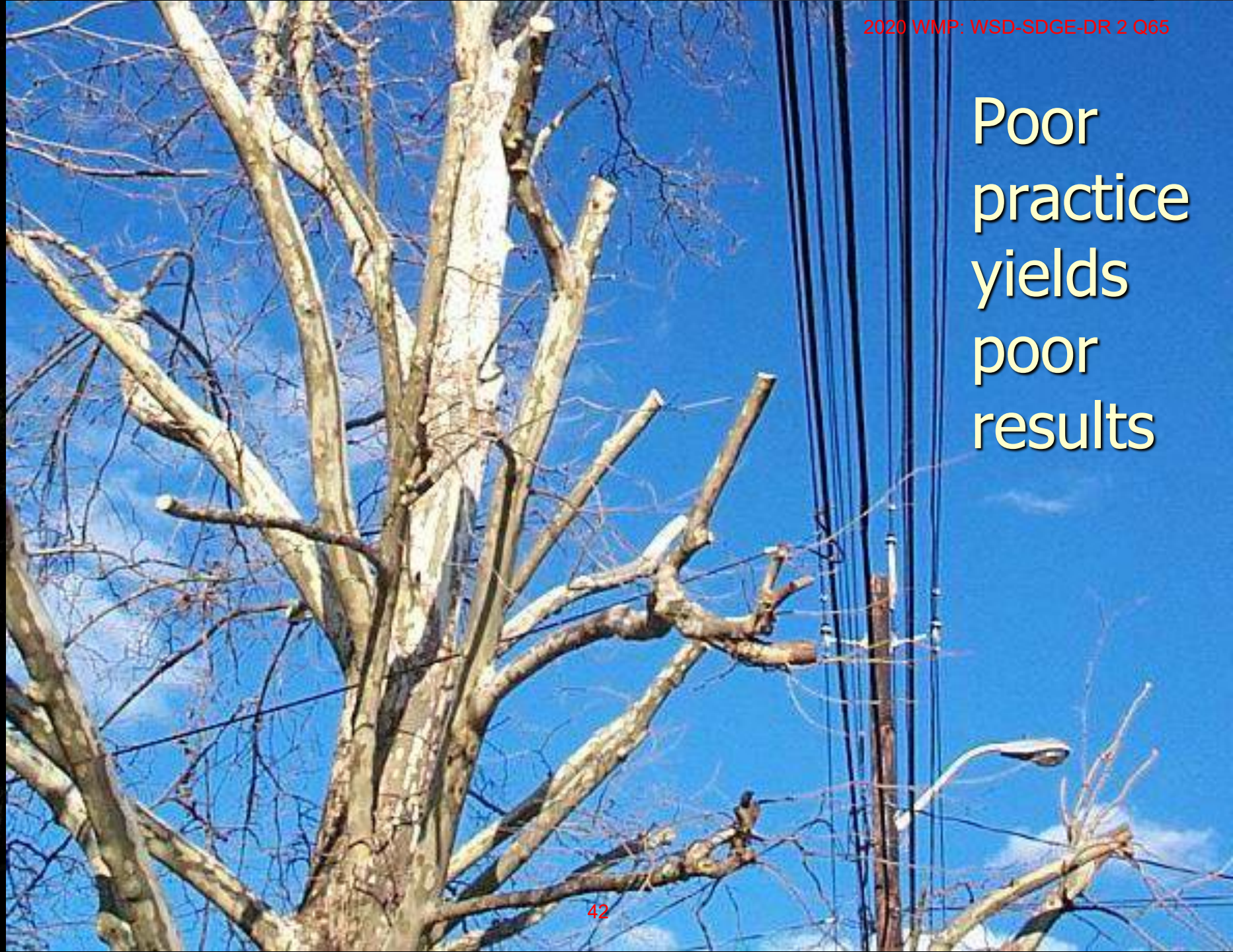
Opportunity!

Opportunity!

If trees have access to light, soil and water…

- They will take advantage of that opportunity!
- Power line or not!

Trees respond predictably to certain treatments:


Poor practice yields poor results

Parts of a tree

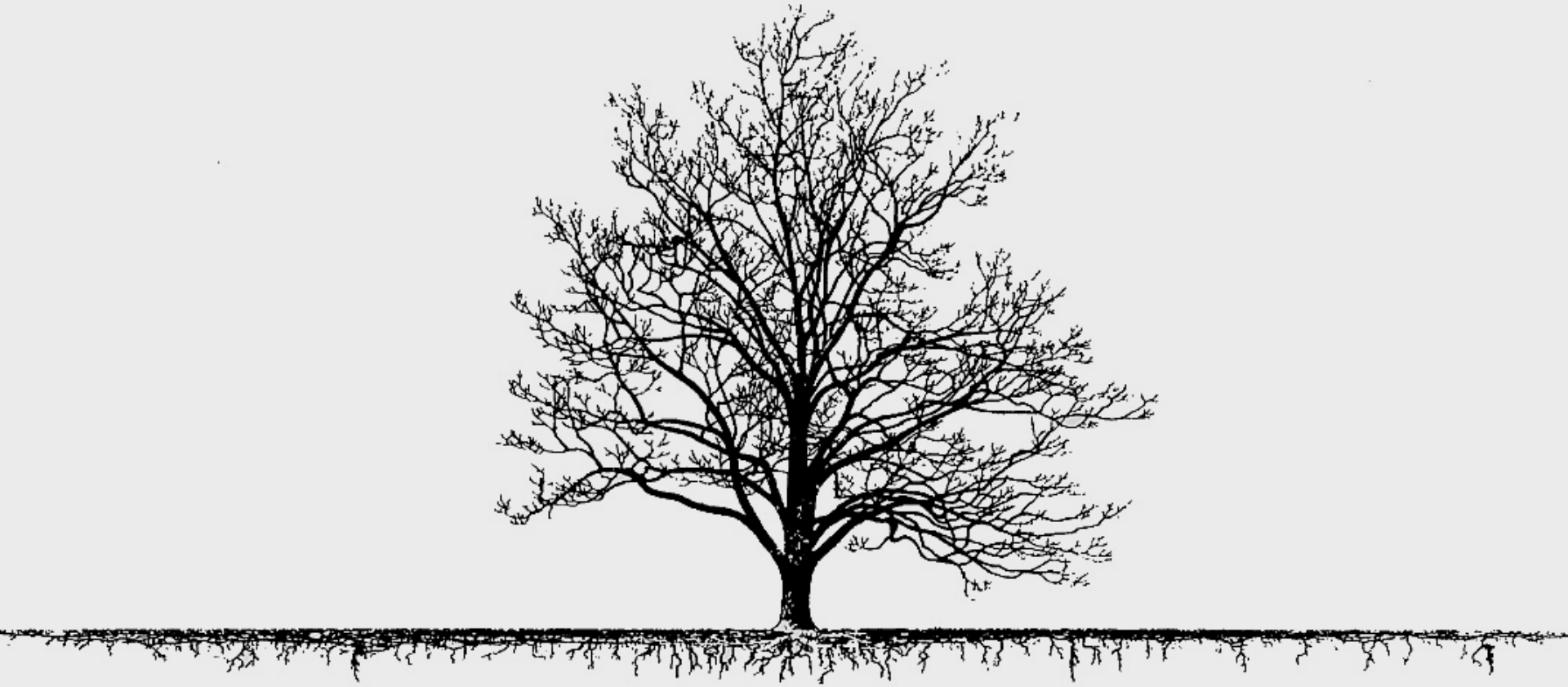
Trunk and Branches

Basic functions:

- Support the tree
- Circulatory system:
  - *Transport water and nutrients*
- Access to light

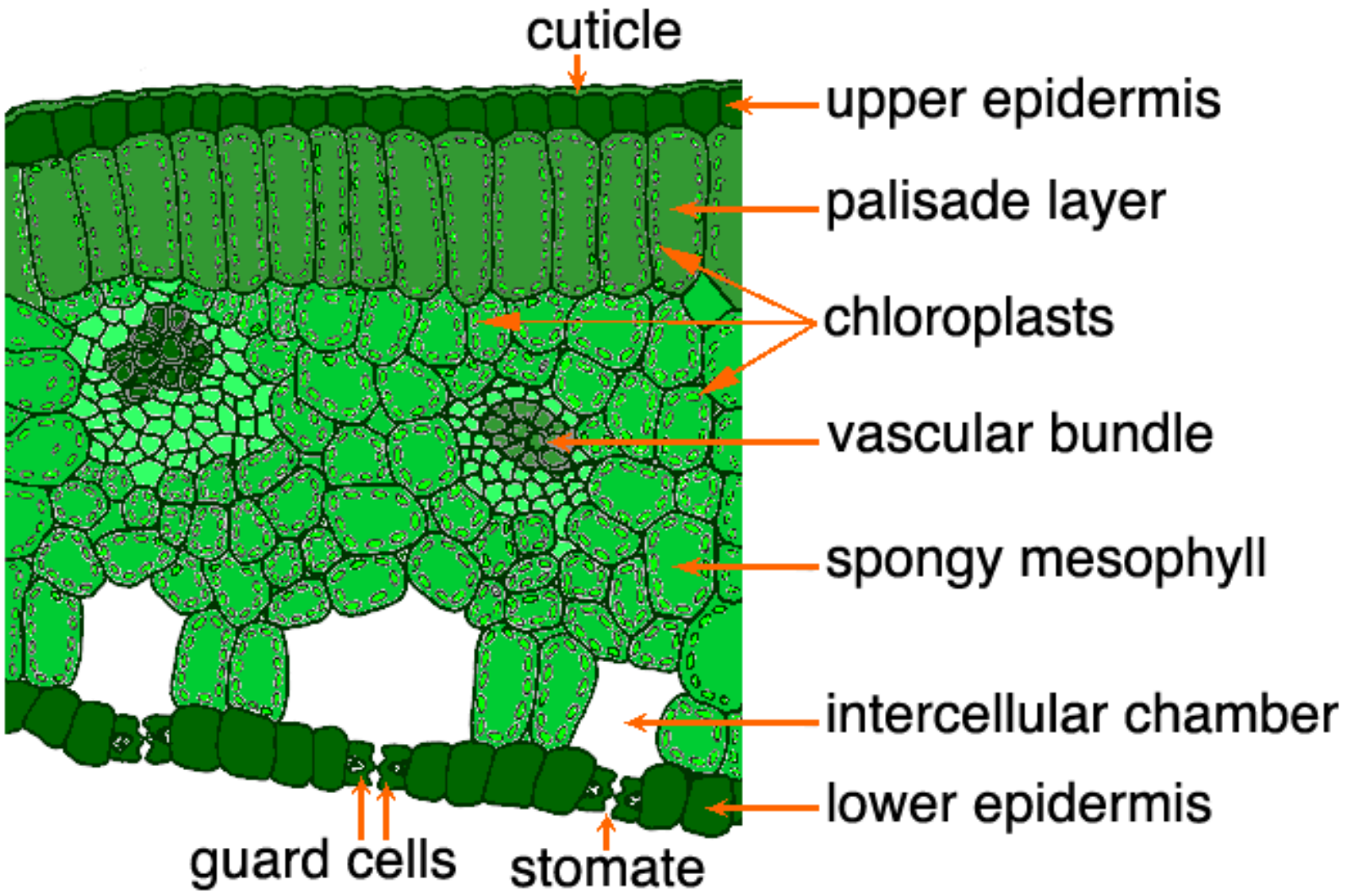
Roots

- Anchor the tree
- Absorb and transport water, essential minerals and nutrients
- Storage



Leaves

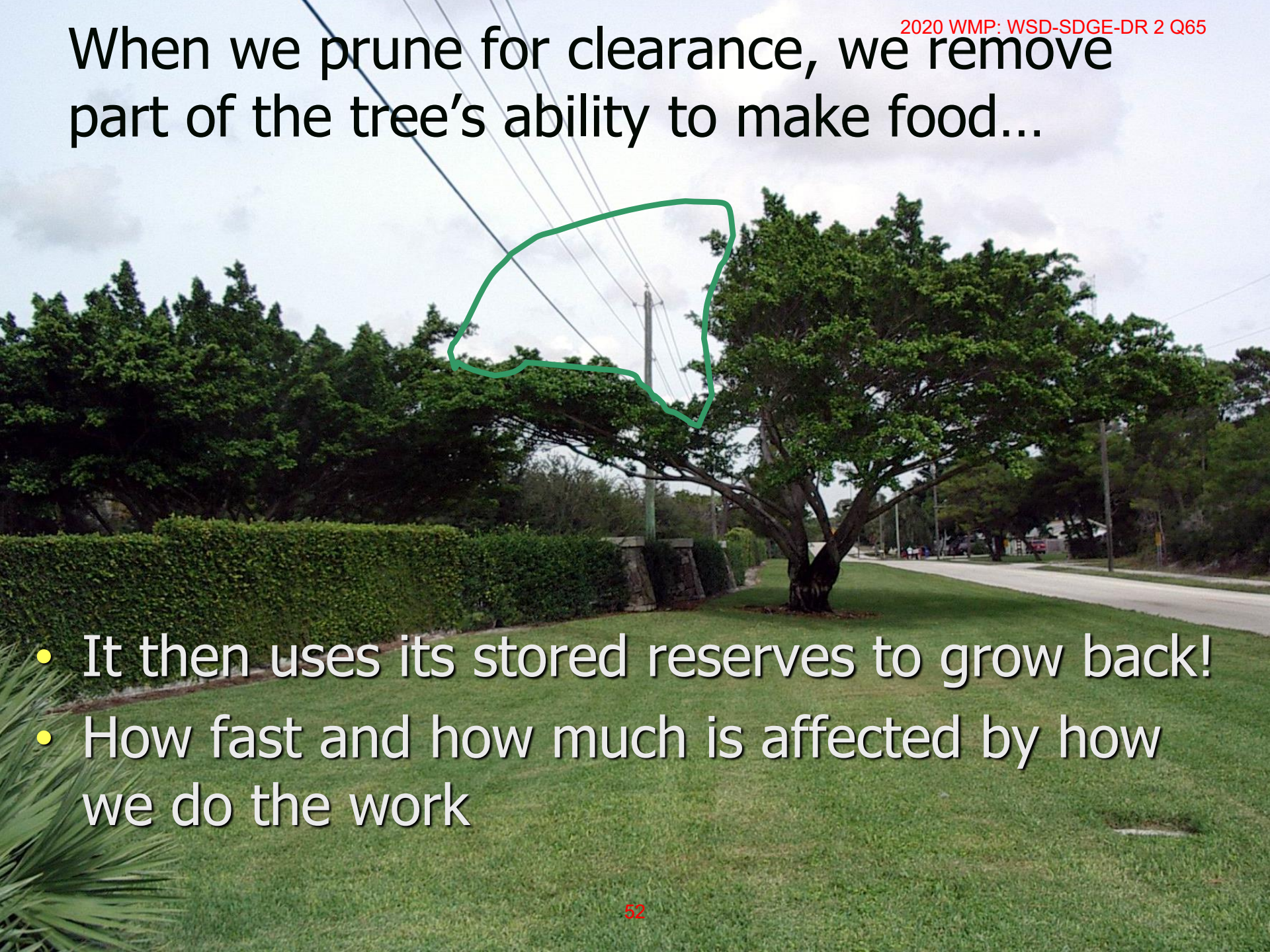
Leaves make **food** using **chlorophyll**


cuticle
upper epidermis
palisade layer
chloroplasts
vascular bundle
spongy mesophyll
intercellular chamber
lower epidermis
guard cells
stomate

Simple Leaves

Compound Leaves

When we prune for clearance, we remove part of the tree's ability to make food…



- It then uses its stored reserves to grow back!
- How fast and how much is affected by how we do the work

- Tree shape and growth rates are controlled by their environment, and chemicals produced in the terminal buds *at the ends of branches.*

If all the buds are removed, the tree grows back rapidly, with poor form

If all the buds are removed, the tree grows back rapidly, with poor form

Cutting to laterals using directional pruning preserves buds and reduces unwanted growth

- Trees are opportunists
  - They take advantage whenever they can!
- Trees are complex living organisms
  - Trees make their own food!
- Trees respond to their environment and our treatments
- Applying what we know improves results
  - Know your trees!

ANSI Standards

Our training and operations comply with applicable ANSI Standards

What are ANSI Standards?

ANSI
American National Standards Institute

- ANSI Standards are not created by government
- ANSI Z133 SAFETY and ANSI A300 TREE CARE standards are created *by arborists for arborists*

ANSI Standards for Utility Arborists

Z133 *Safety*

- Since 1972
- Provides safety rules for tree work
- Applies to *employers and employees*
- Uses:
  - To create safety training programs
  - By government to create safety regulations

Bottom line: Whatever you do, do it safely!

A300 *Tree Care*

- Since 1995
- Defines standard practices for tree care
- Applies to *persons practicing arboriculture, including utilities*
- Uses:
  - Specifications, training programs and regulations as appropriate

Bottom line: Whatever you do, do it right!

ANSI A300 Participants

- **Tree Industry Groups**, including
  - Tree Care Industry Association (TCIA)
  - International Society of Arboriculture (ISA)
  - American Society of Consulting Arborists (ASCA)
  - Society of Municipal Arborists (SMA)
  - Utility Arborist Association (UAA)
- **Companies**, including
  - Asplundh
  - Davey
  - Bartlett
- **U.S. Government Agencies**, including
  - The National Park Service
  - USDA Forest Service
- And more!

Professional practice, including proper utility pruning is endorsed and expected by everyone!

- A300 Standards apply to all professional tree care, including utility arboriculture

- *Industry standards don't always match homeowner expectations!*

Pruning cuts

- Branch removal
- Reduction
- Heading
- Shearing

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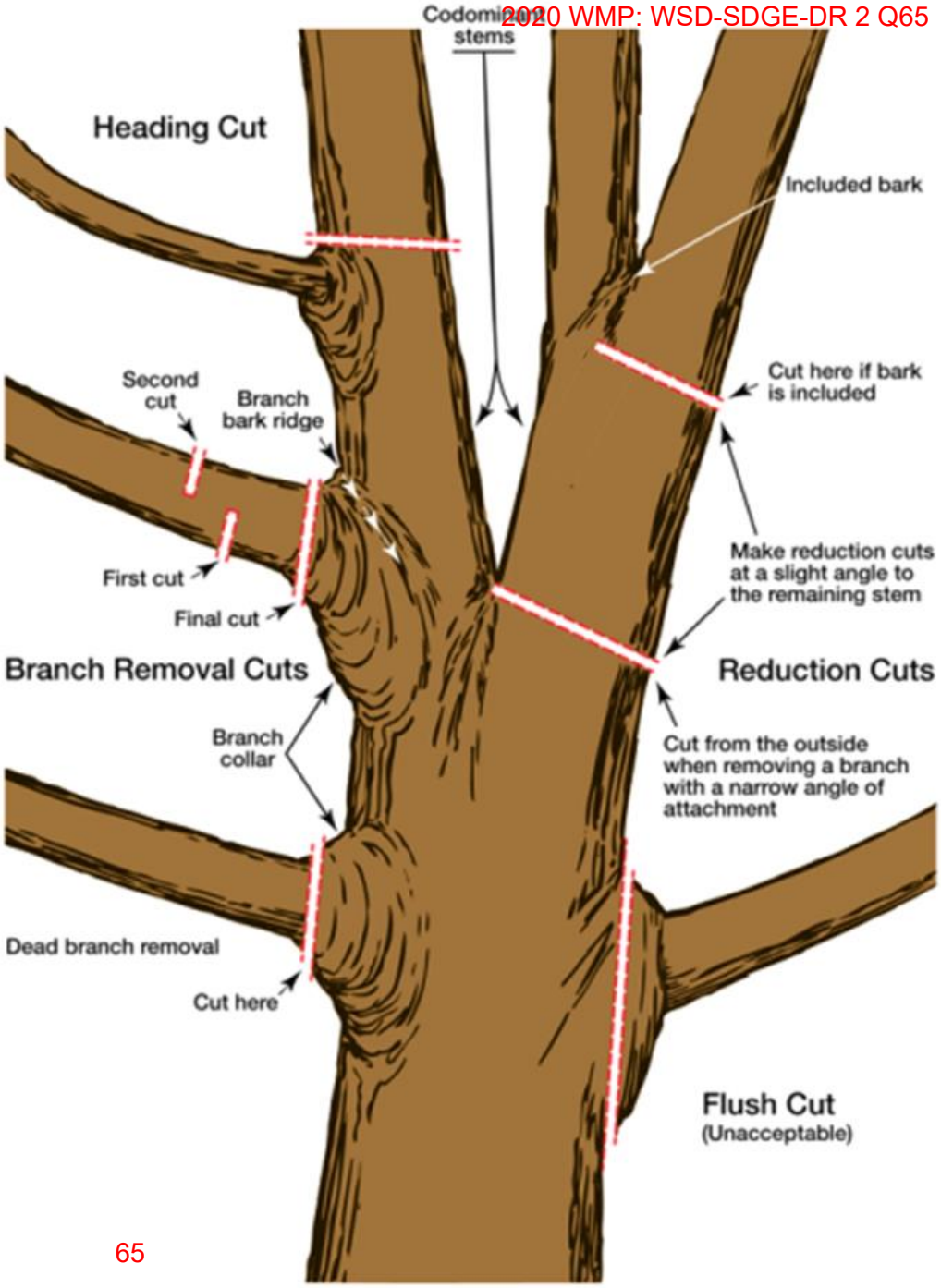
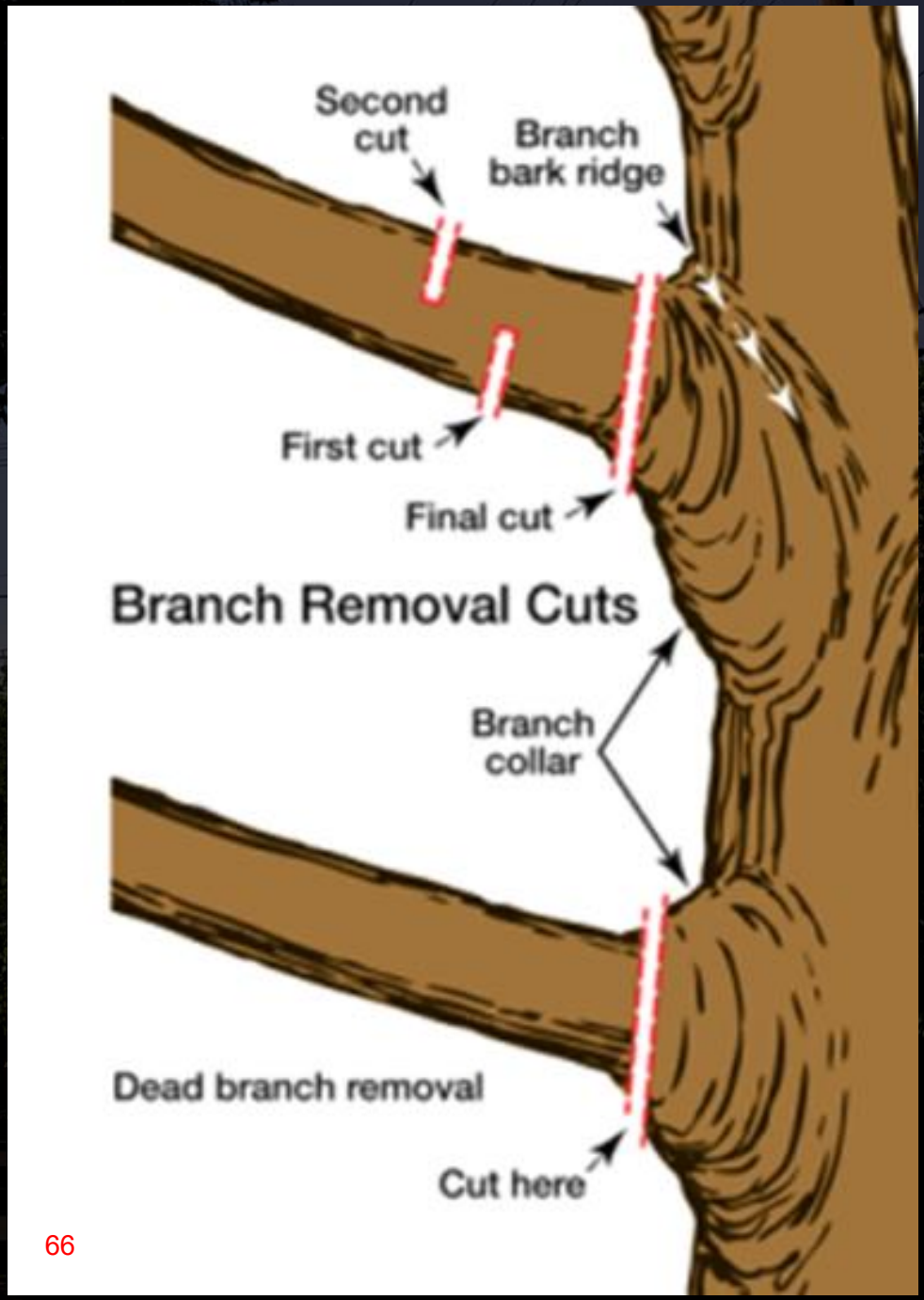


Pruning

Branch Removal Cut

Removes the smaller of two branches at a union or a parent stem, without cutting into the branch bark ridge or branch collar, or leaving a stub.

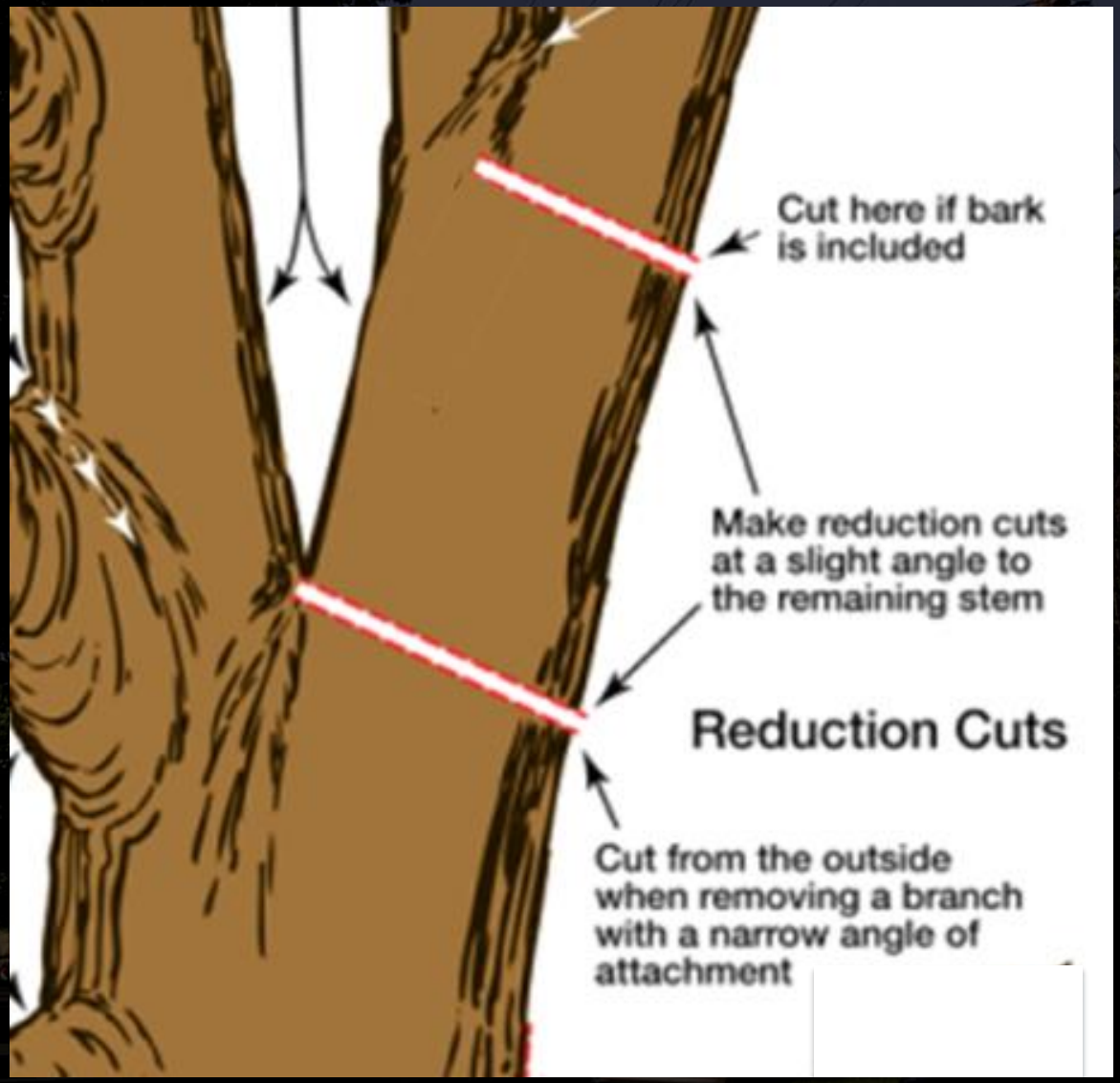
Precut large branches



Pruning

Reduction Cut

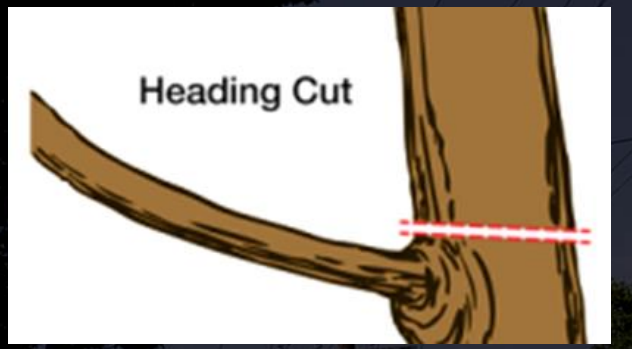
Removes the larger of two or more branches or stems, or one or more codominant stem(s), to a live lateral branch, typically at least one-third the diameter of the stem or branch being removed.

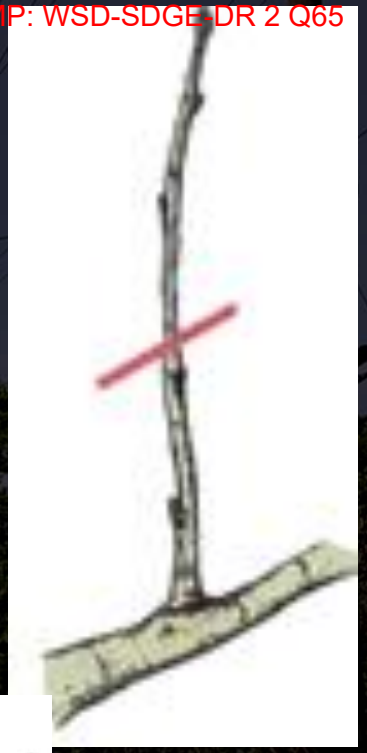


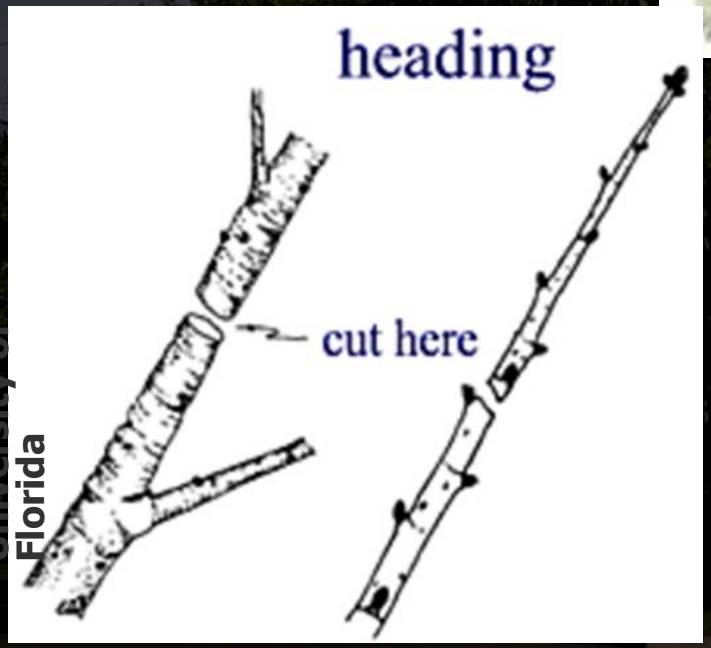
Pruning

Heading cut

Removes a branch or stem between nodes (leaving a stub), to a bud, or to a live branch typically less than one-third the diameter of the branch or stem being removed.





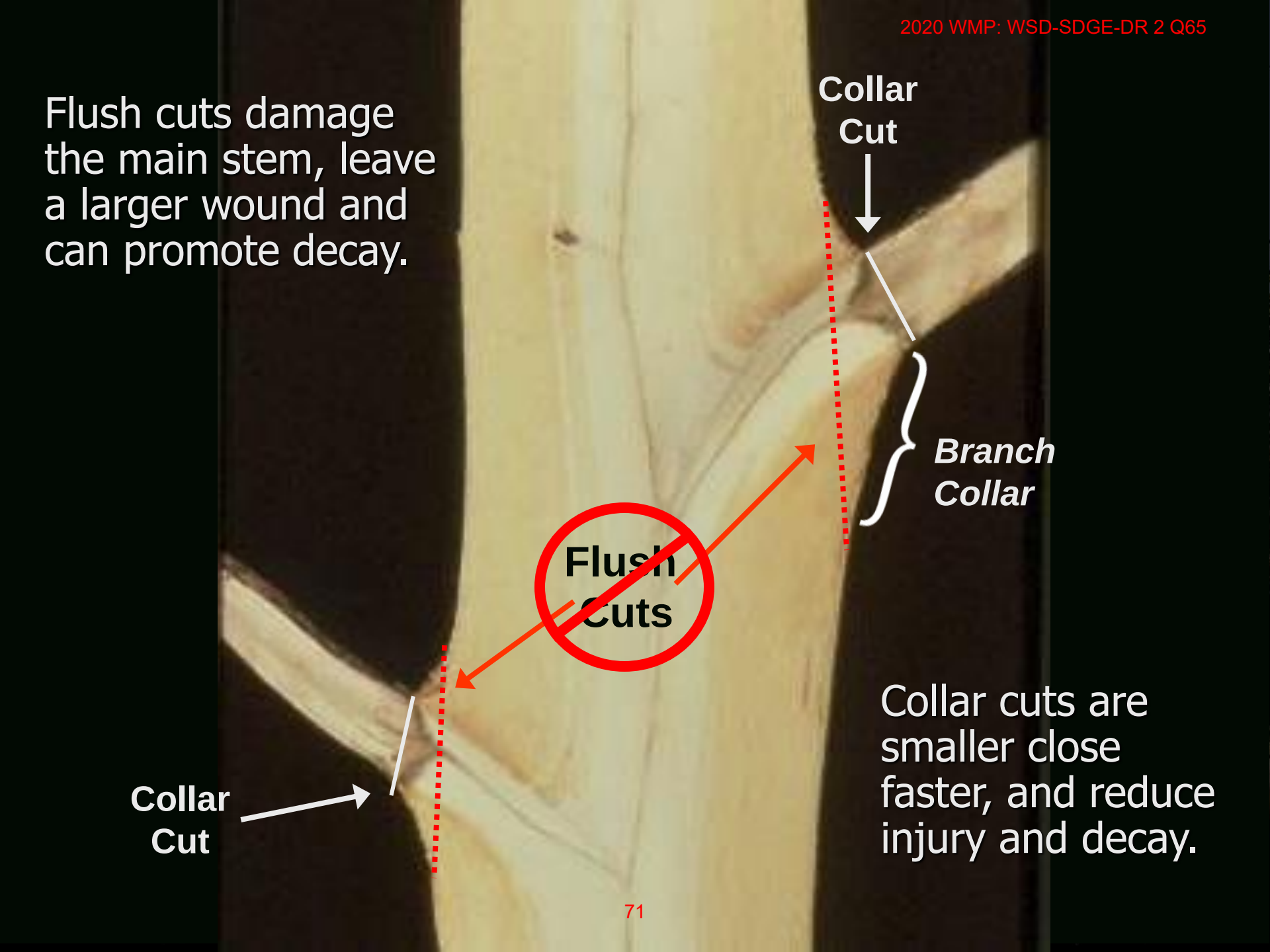


University of Florida
Colorado State University

A300 on Utility Pruning

- Directional pruning:
  - Remove branches growing toward power lines
  - Reduce to laterals
- No stubs
- Don’t damage the branch collar
- Prune trees by species
  - More clearance for fast growers

Branch
collar


Flush cuts damage the main stem, leave a larger wound and can promote decay.
Collar Cut
Branch Collar
Flush Cuts
Collar Cut
Collar cuts are smaller close faster, and reduce injury and decay.

Branch Bark Ridge
Collar Cuts

Dead Branch/Stub Removal

Each tree is different

Trees vary:

- Species
- Condition
- Growth rate
- Growth habit
  - Size, form, etc
- Reaction to pruning
- Wood strength
- Likelihood of failure

Take these into account on every tree
Know your trees!

Has anyone ever complained about the work you do?

- Gripes?
- Grumbles?
- Threats?

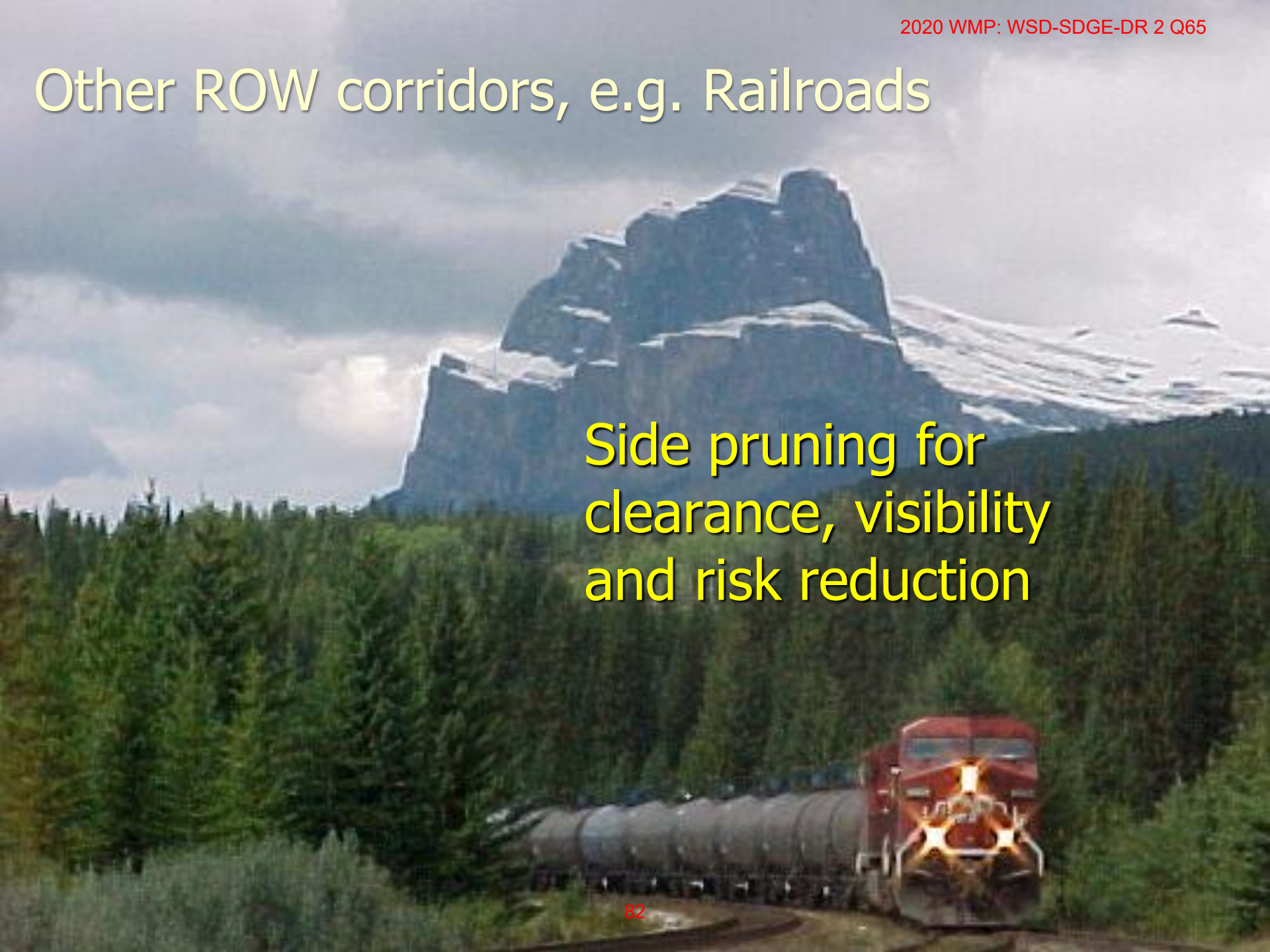
What happened to this tree?
Why did it grow that way?
What is holding it up?

- Every tree is different
- Furthermore…
  - *Many arborists do utility-style pruning and nobody complains…*

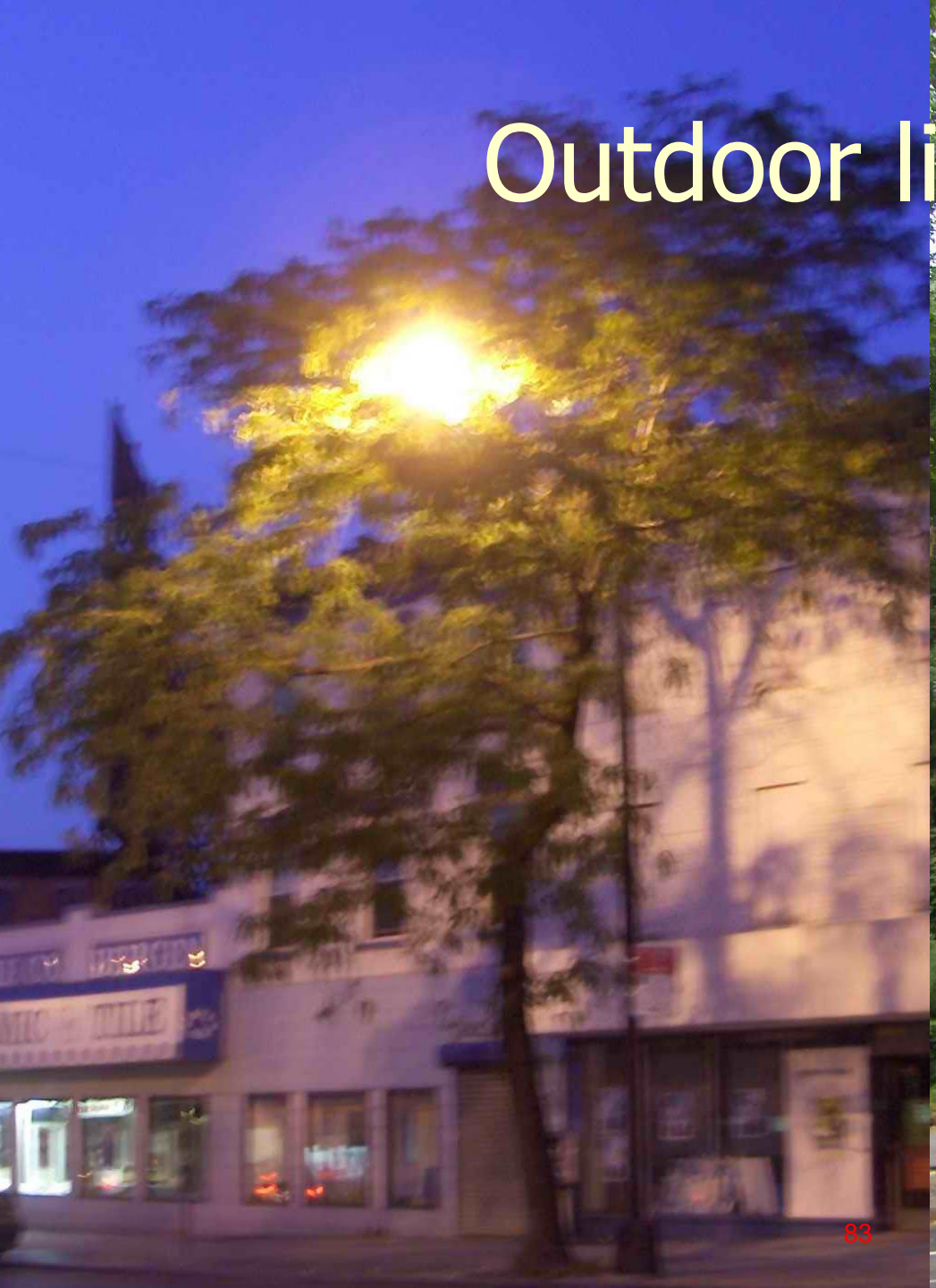
Utility Pruning

-other than electric utility…

Other ROW corridors, e.g. Railroads

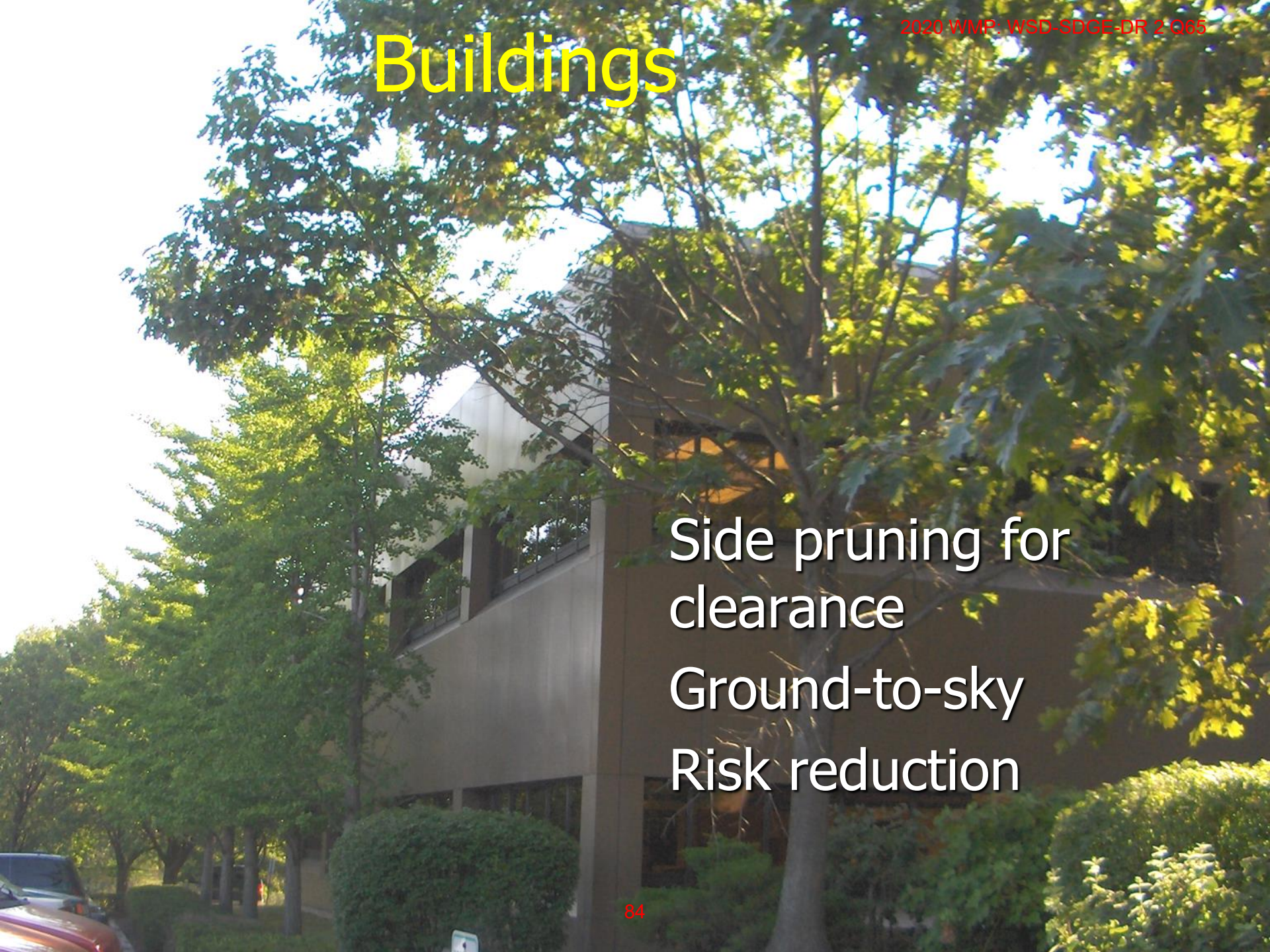


Outdoor lighting



Reduction pruning
Under-clearance
Safety

Buildings



Side pruning for clearance

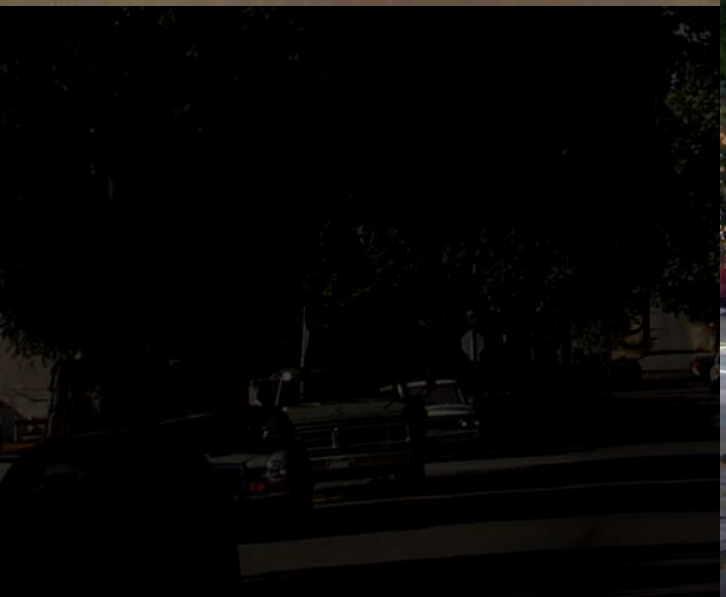
Ground-to-sky

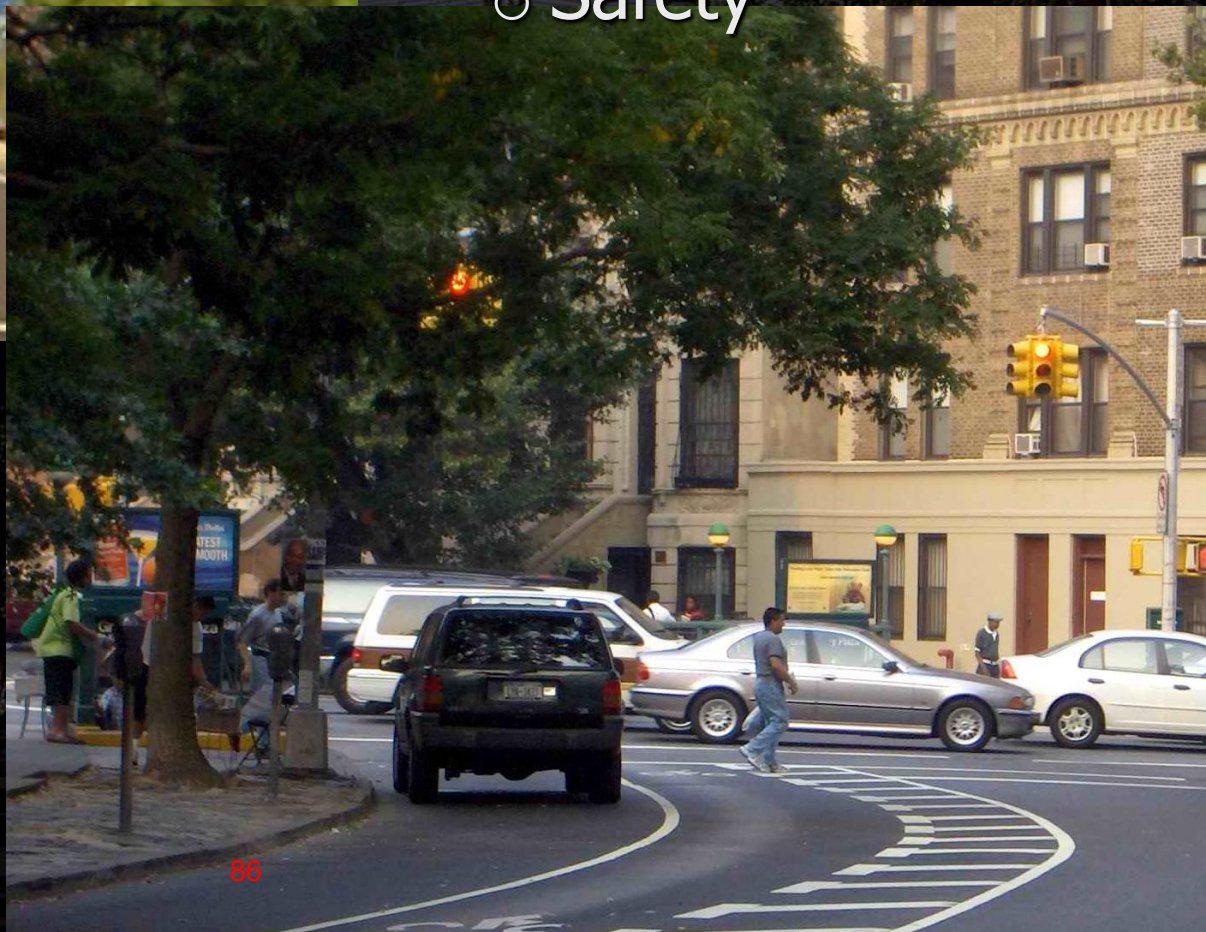
Risk reduction

Bu

Critical lines of sight

- Traffic signs
- Signals
- Pedestrians
- Safety





Views

- Through pruning
- Directional pruning
- Reduction pruning
- Selective removal

Walkways

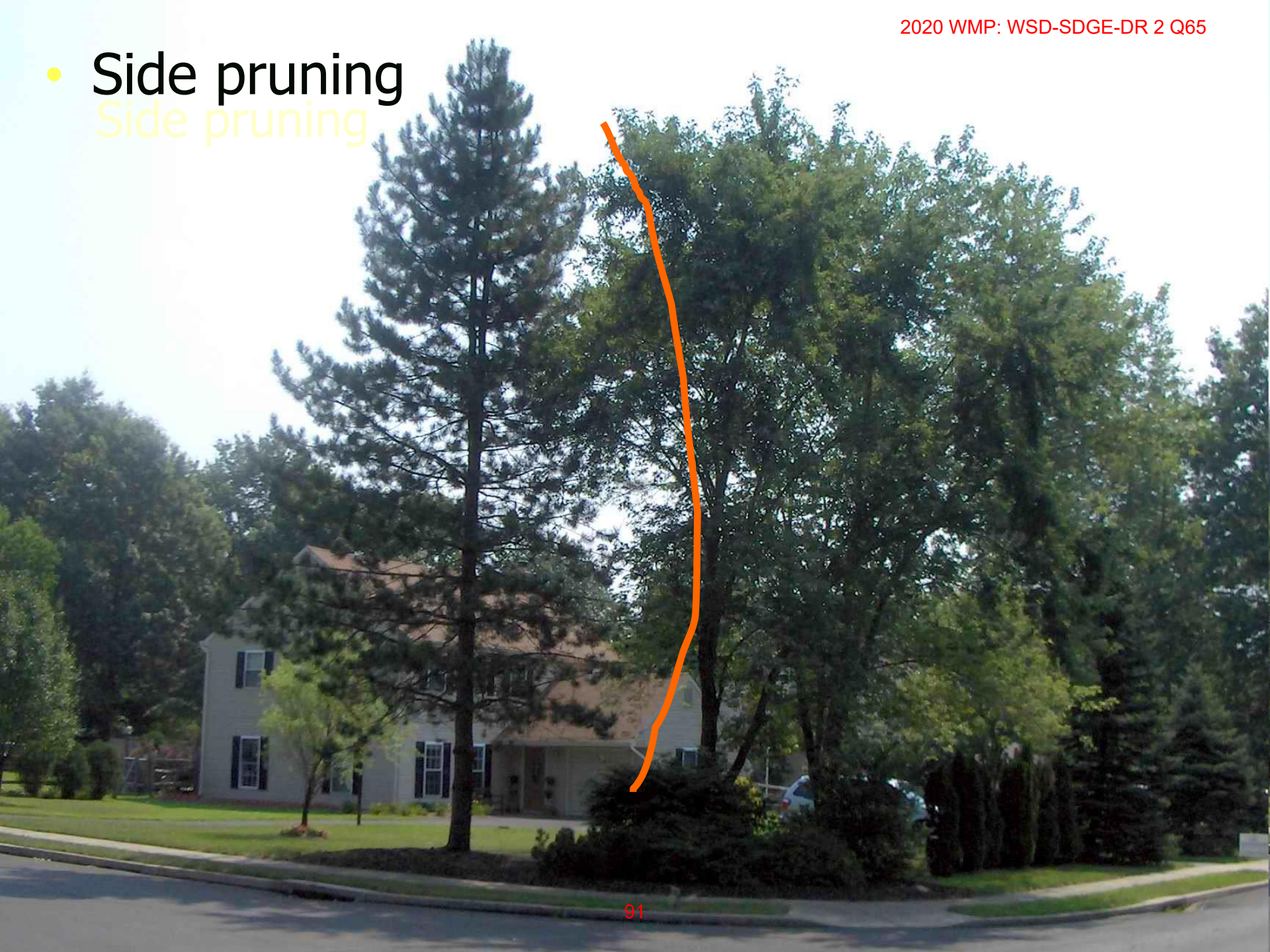
- Under-clearance Reduction
- Side pruning
- Safety

Vehicular clearance

- Under-clearance
- Directional pruning
- Side pruning
- Risk reduction

Landscape: Pruning to reduce competition

- Side pruning



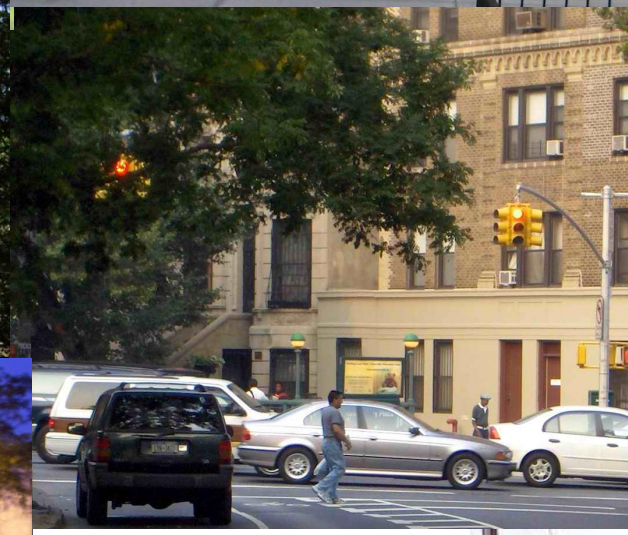
Billboards

- Billboard owners get criticized for pruning trees.
- Is our work more important than billboard pruning?

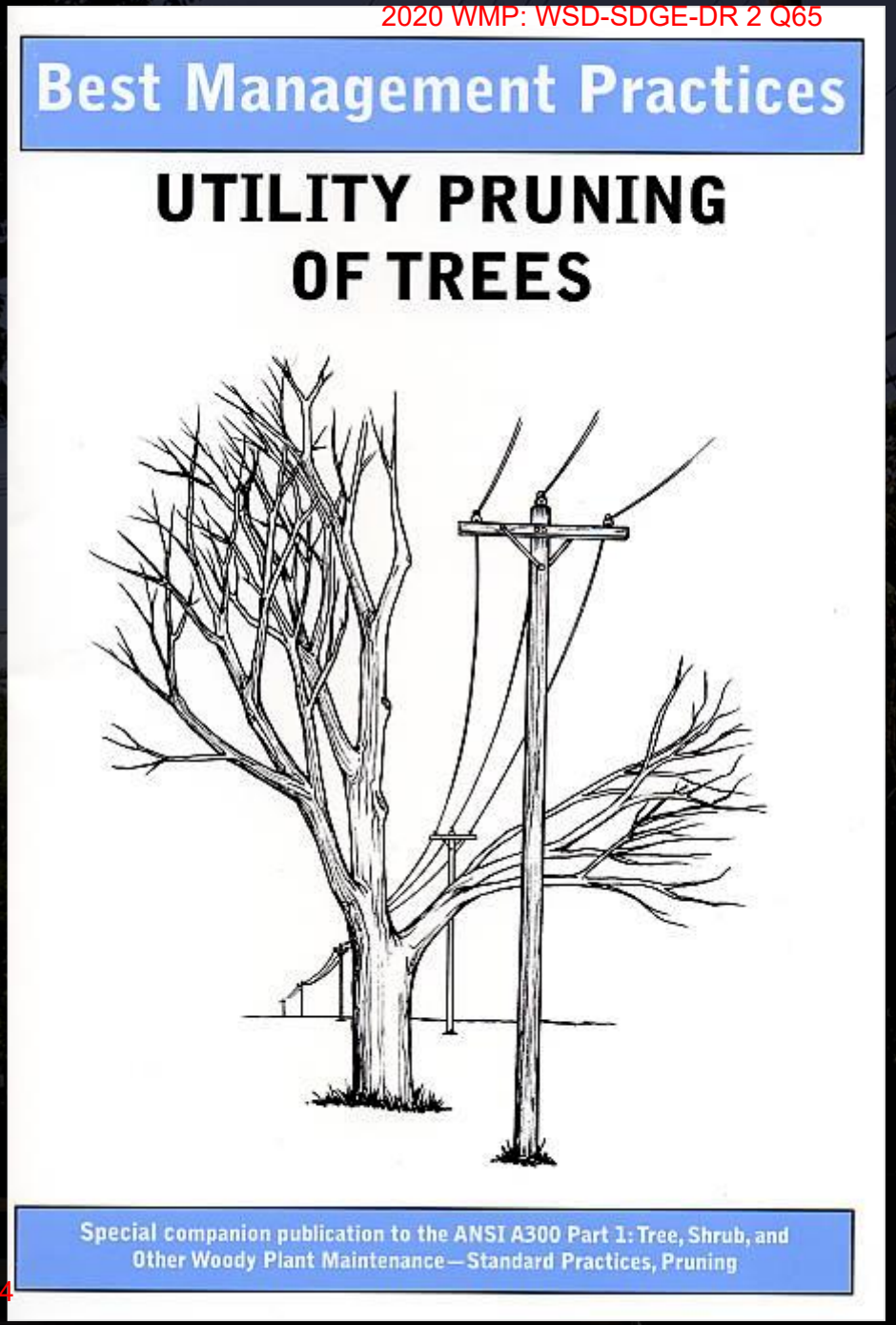
Utility-style pruning is performed in many locations, with few complaints!

Because the reasons are clear!

Better communication with customers will improve perception and acceptance of our work.



Best Practices



Best Practices

Learn from the mistakes of others!

Why Best Practices?

Why Best Practices?

Professional Practice

- Our work is on display for all to see
- Ethical responsibility
  - ***Lives are at stake***
  - ***Reputations are on the line!***
- *Getting it right is part of the job.*

Why Best Practices?

Effectiveness

- Using best practices yields better results
- Poor practice yields poor results
  - Excessive sprouting
  - Higher workload
  - Decay
  - Tree failures
  - ➢ ***Increased Risk!***

Why Best Practices?

Poorly managed trees pose risk to people, property and critical infrastructure

Best Practices?

Sez WHO?

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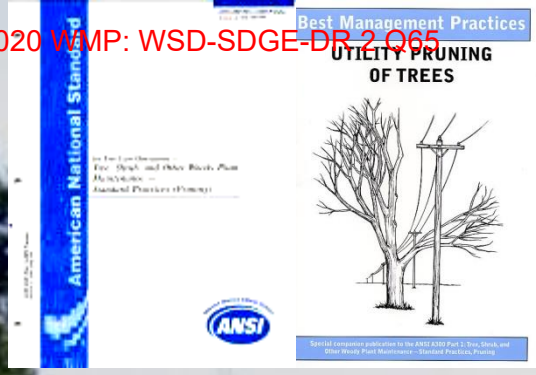
Best Practices

Must be Practical…

…In achieving goals and objectives, e.g.

- High level of safety awareness and performance
- Electric service reliability
- Positive public perception
- High customer satisfaction

Mechanized Rural ROW Pruning



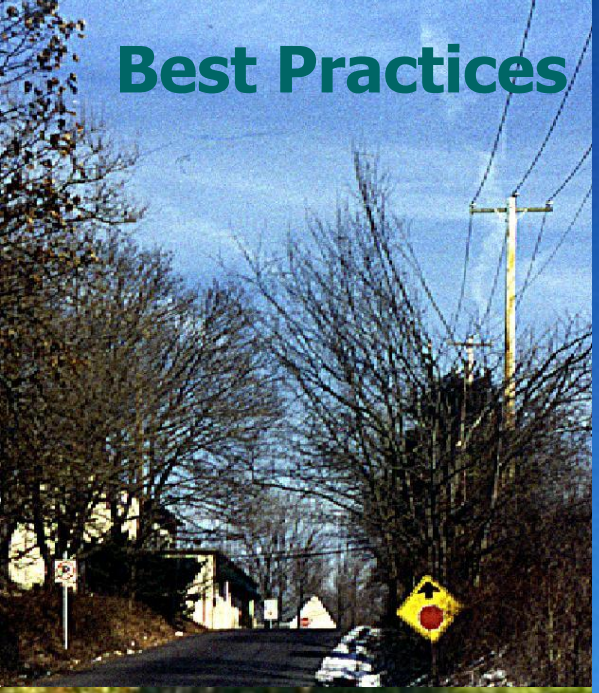
A best practice?

- ✓ **Better safety performance**
- ✓ **Clearance**
- ✓ **Reduced cost**
- X **Quality of tree care**
- X **Customer complaints**
- ? **Improved reliability**
  - ➢ ***Don't run it down Main Street!***

Where would you use this machine?

"Best" in remote/rural locations

Best Practices



Common ground?

Common Ground

We can agree that

- Some practices are highly effective
- Some practices are destructive and should be avoided
- What is the "Best" practice often depends on the circumstances

Best Practices

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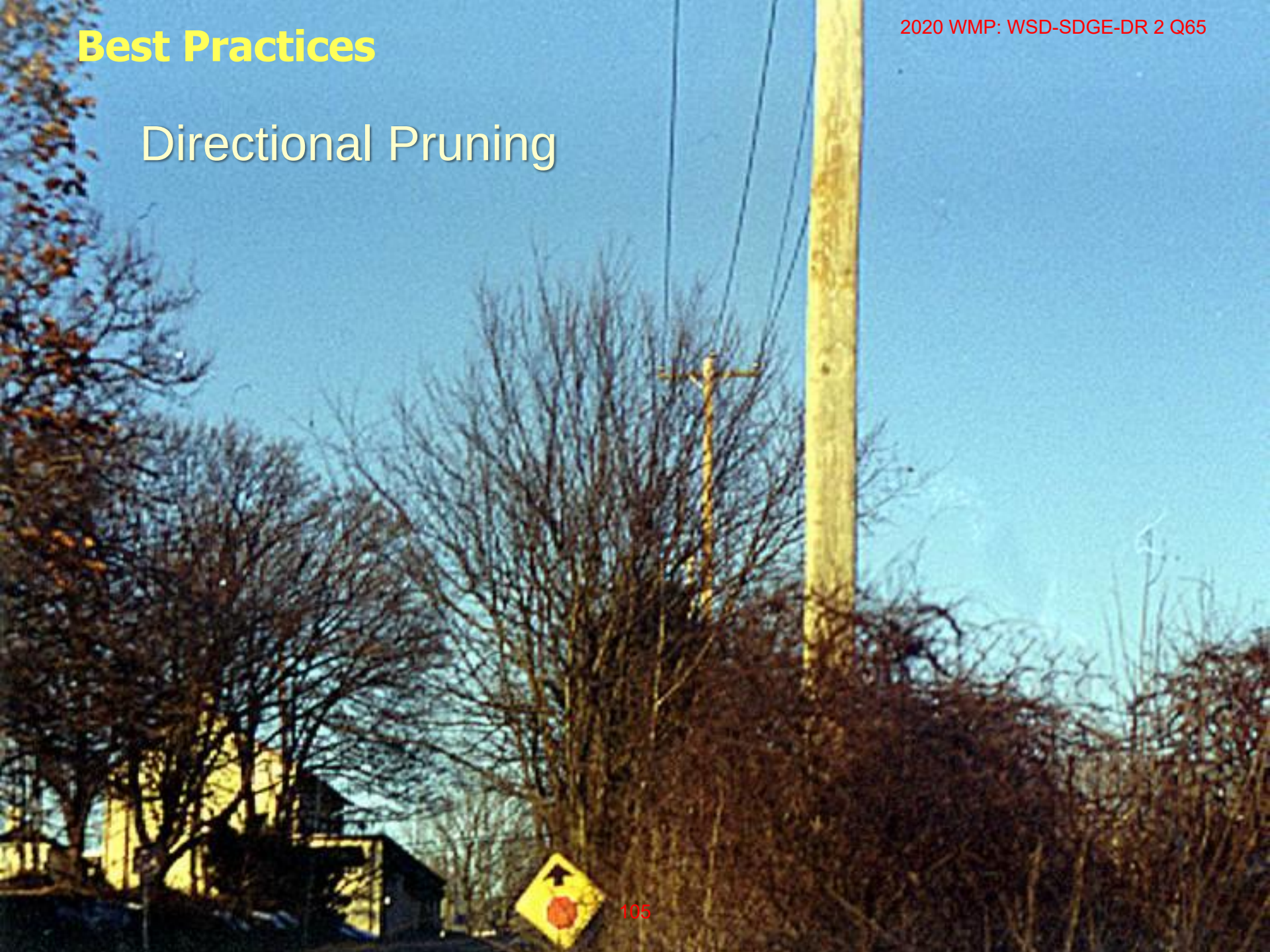
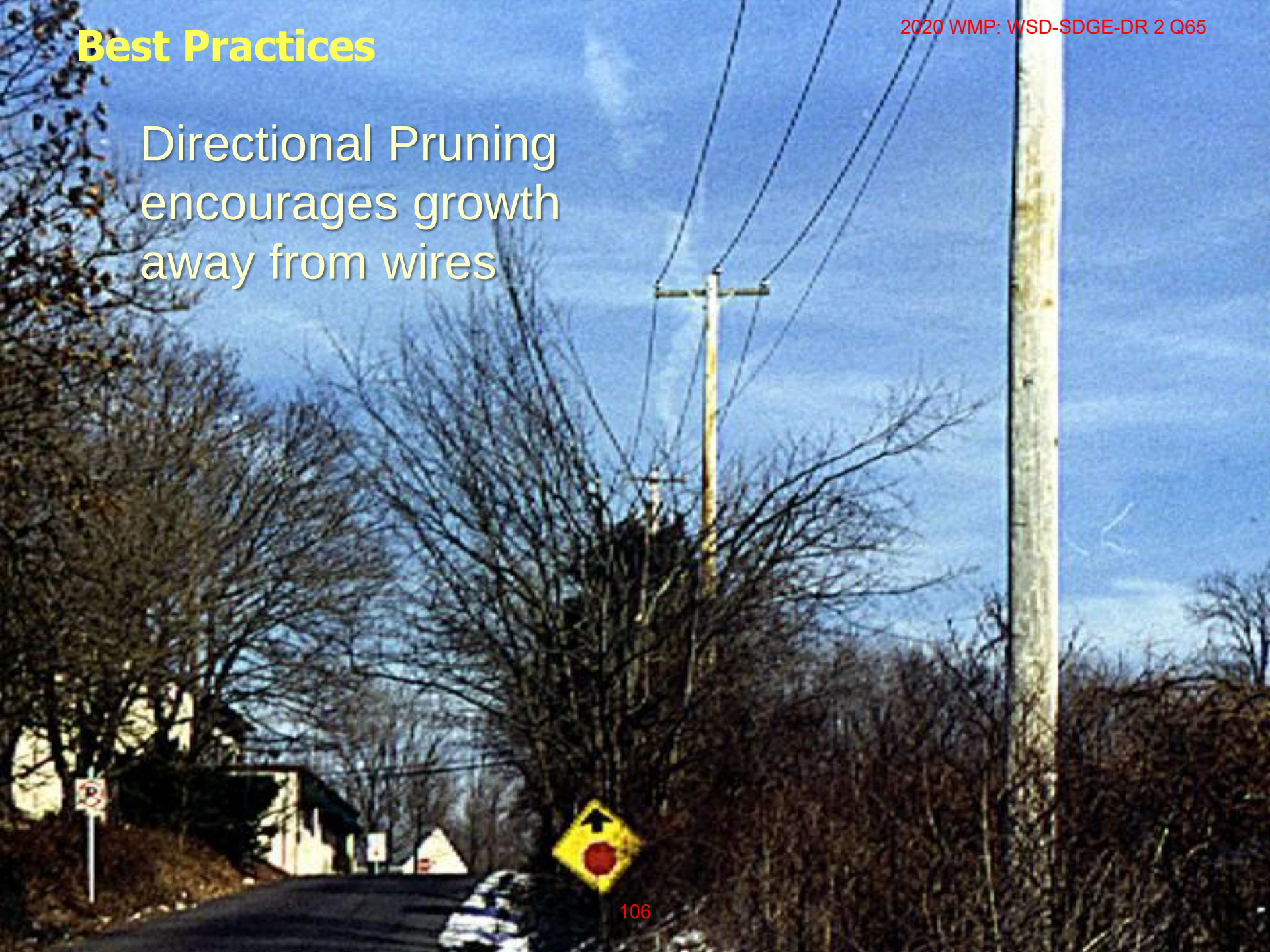
Directional Pruning



Best Practices

Directional Pruning encourages growth away from wires



Best Practices

Pruning Method

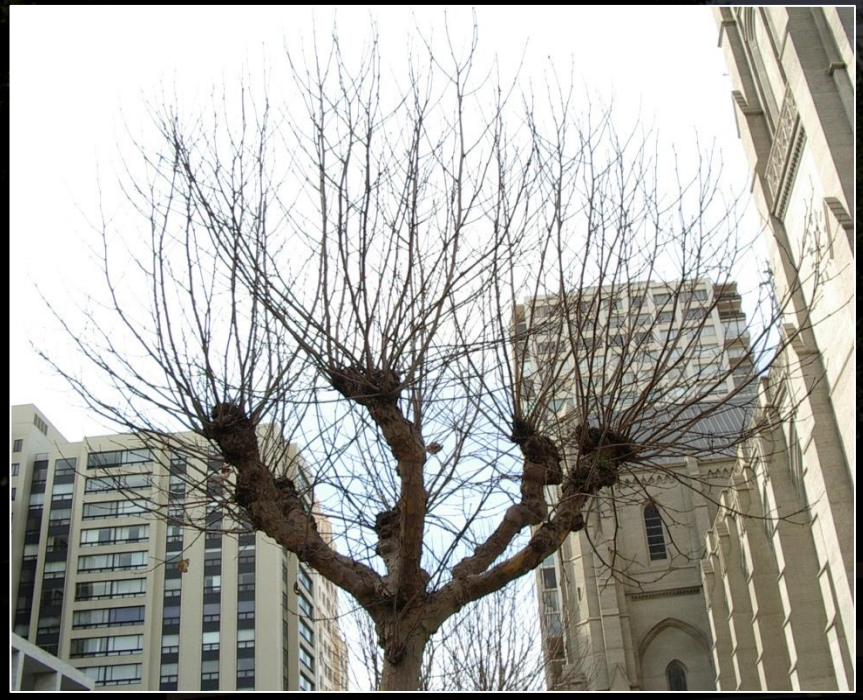
Use Directional Pruning. Clear branches growing toward power lines. Develop good tree structure.

Not a Best Practice

Rounding over, topping and stubbing causes damage, decay and rapid growth of sprouts – ***NOT a best practice***

Best Practices

Pollarding requires annual removal of sprouts, and can be a best practice, however it is **not** recommended under power lines.



Best Practices
Shearing can be a best practice

Best Practices

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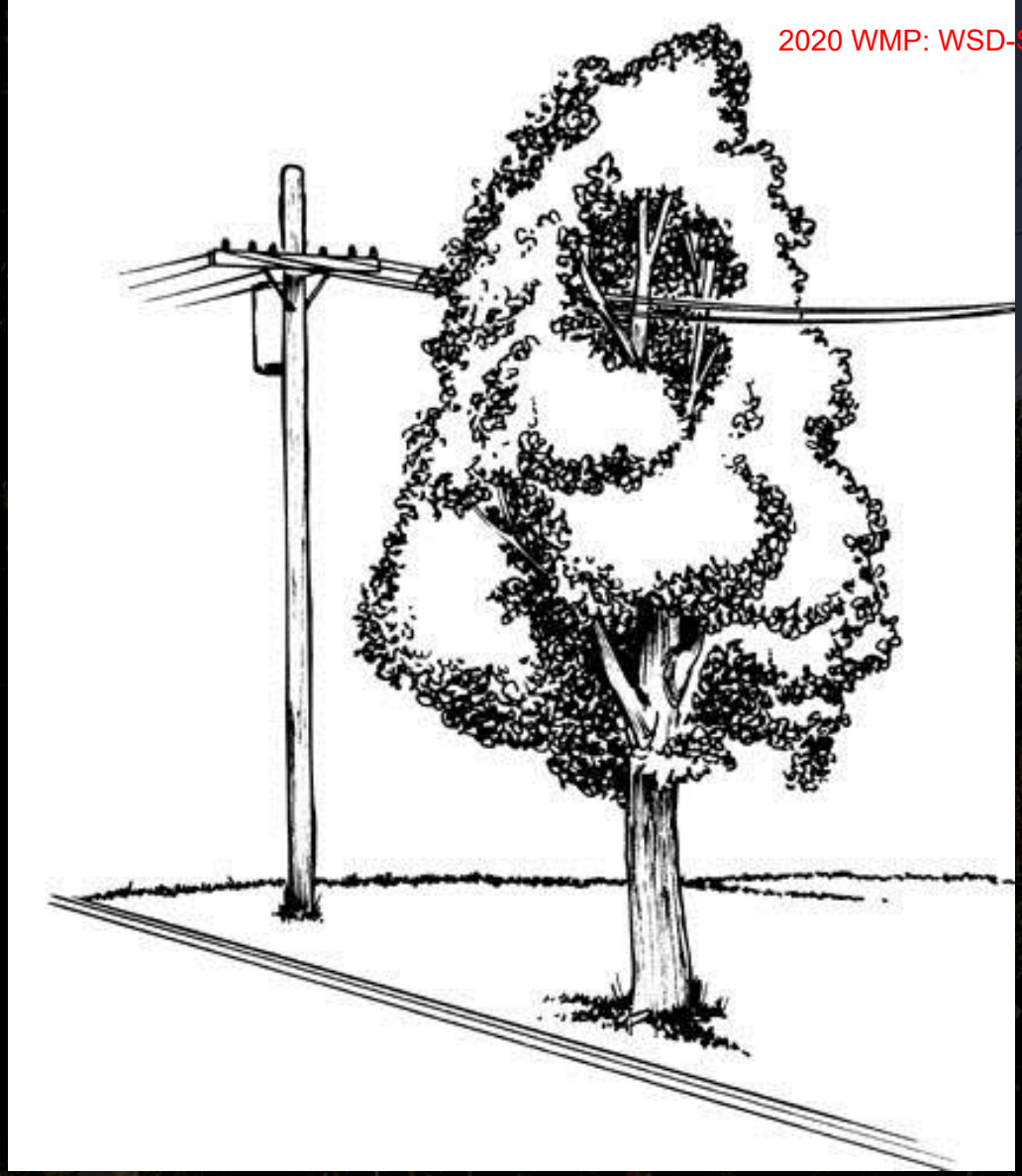
Pruning on cycle



Trees not maintained on cycle grow into wires. Recovery may require extensive pruning or tree removal.

ANSI A300 "25% Rule" no longer in effect

New language:

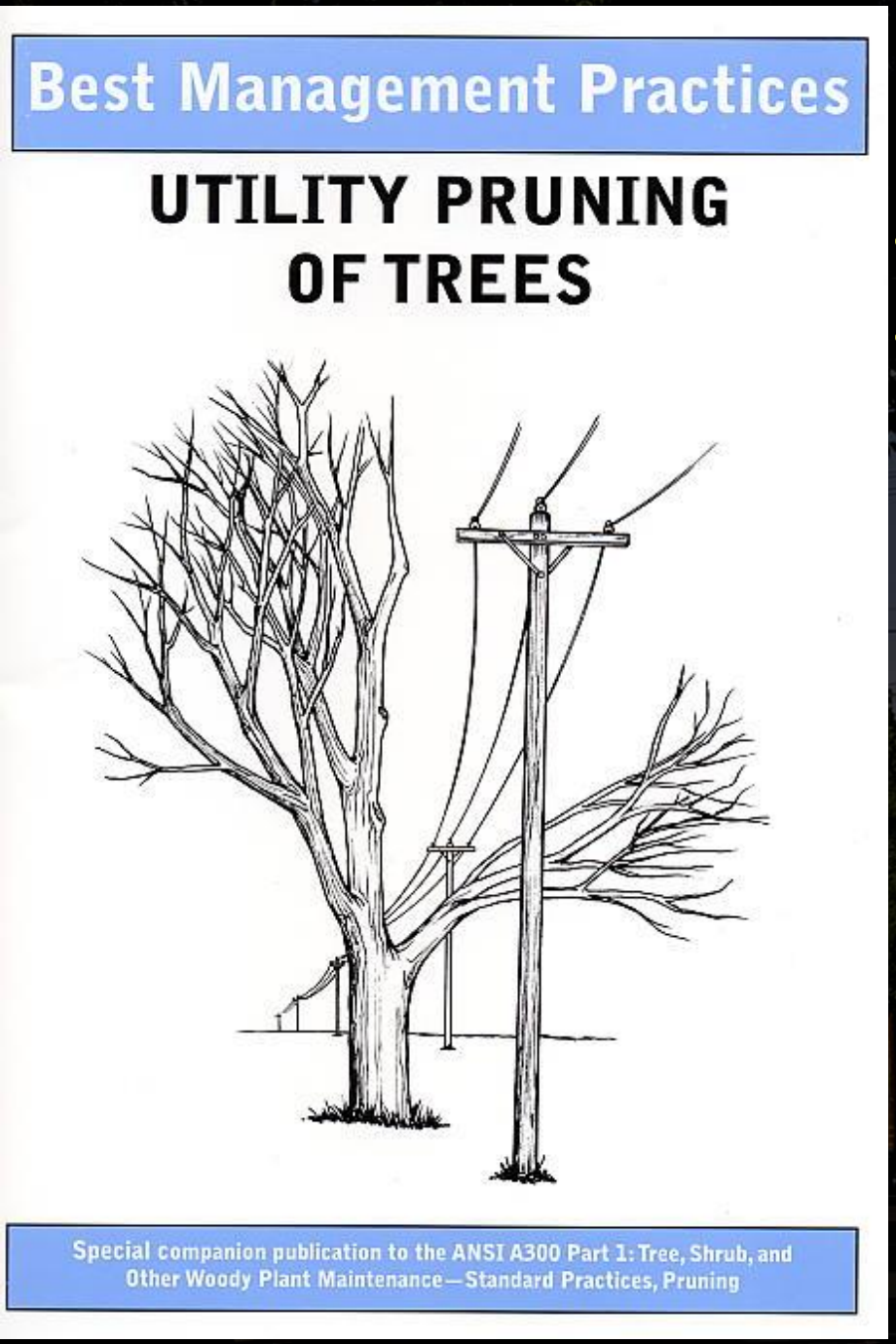
…Remove no more living material than what is necessary to achieve specified objectives.

[Your objective is to provide safe and reliable power in high fire-risk areas]

Species, size, age, condition, and site shall be considered when specifying the location and amount of live branches to be removed.

Best Practice:

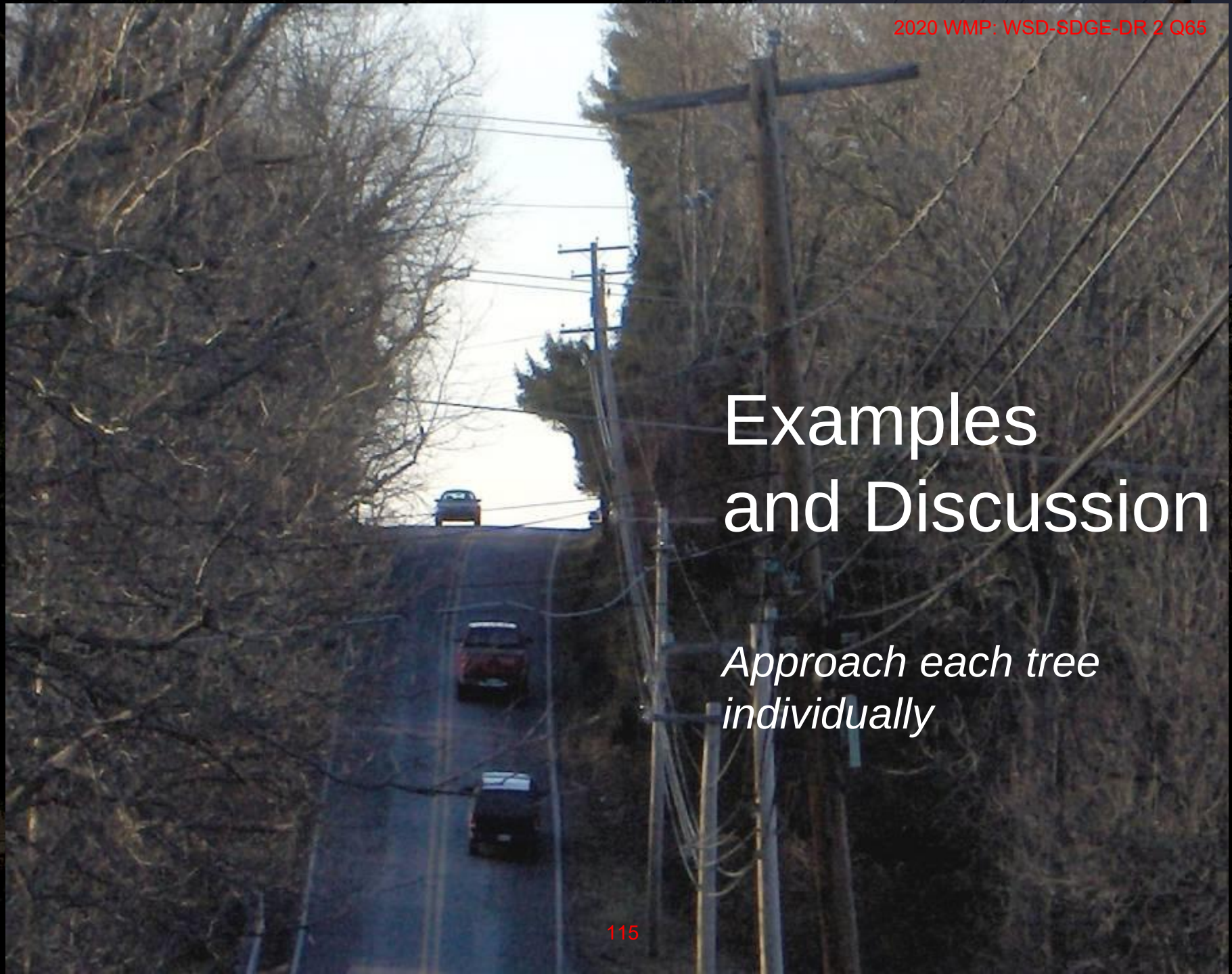
If the site is close to primary power lines, safety, reliability and fire prevention are considered when determining amount to be removed.



"Best Practices"

- Are updated with the times
- Remember:
  - Best Management Practices are guidelines
  - *Every situation is different!*
  - *YOU* are the professional
  - You determine what the best practice is in any given location

➢ *Safe work practices are ALWAYS a best practice!*



Examples and Discussion

Approach each tree individually

Roundover with regrowth

Topping causes heavy sprout growth

A300-based specification

Directional pruning reduces sprout growth

Stubs

Proper cuts back to main leads reduce regrowth

Lateral too small

Nothing but trouble!

Make cut here

Stub Cut

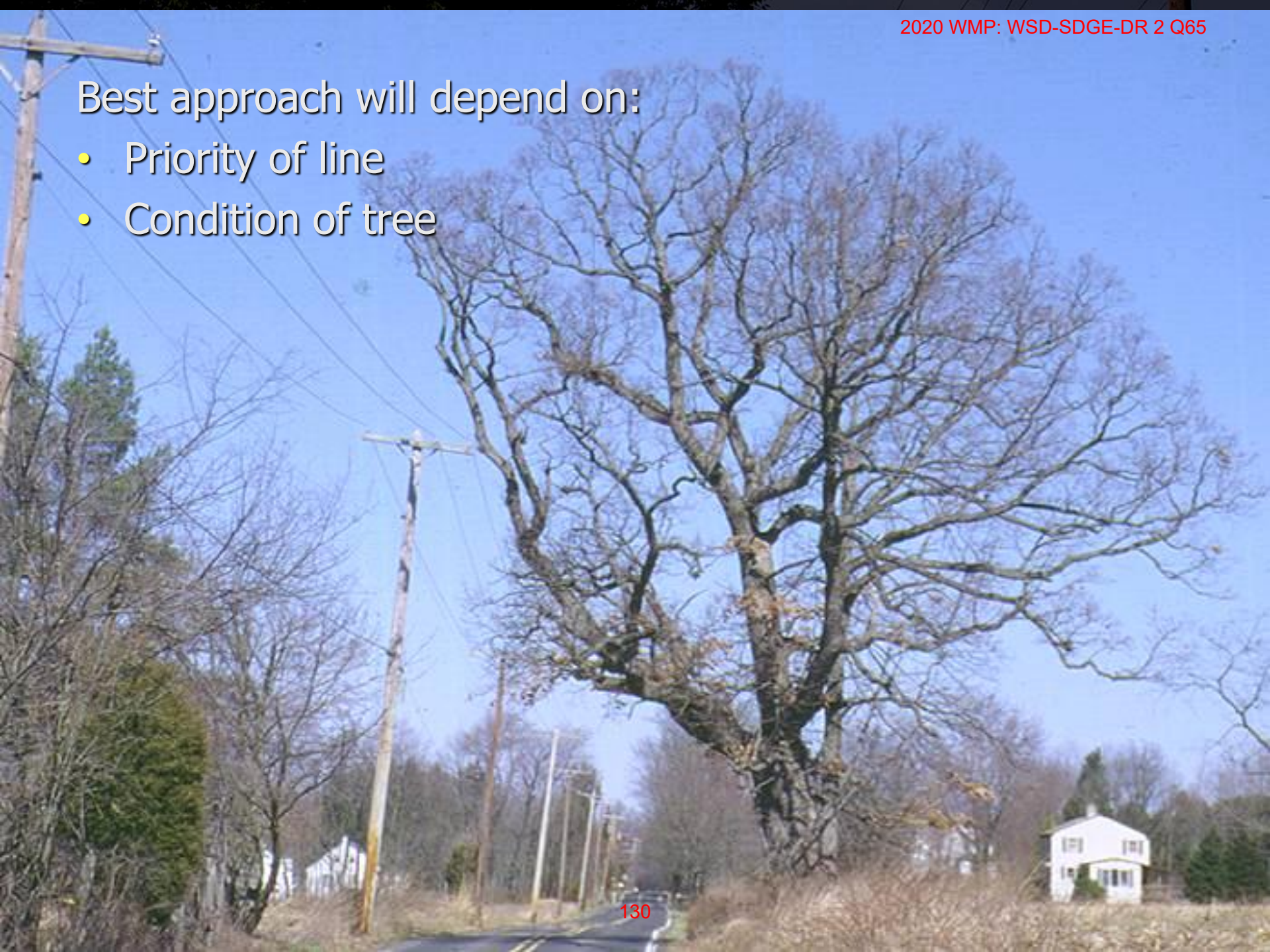
Stub Cut

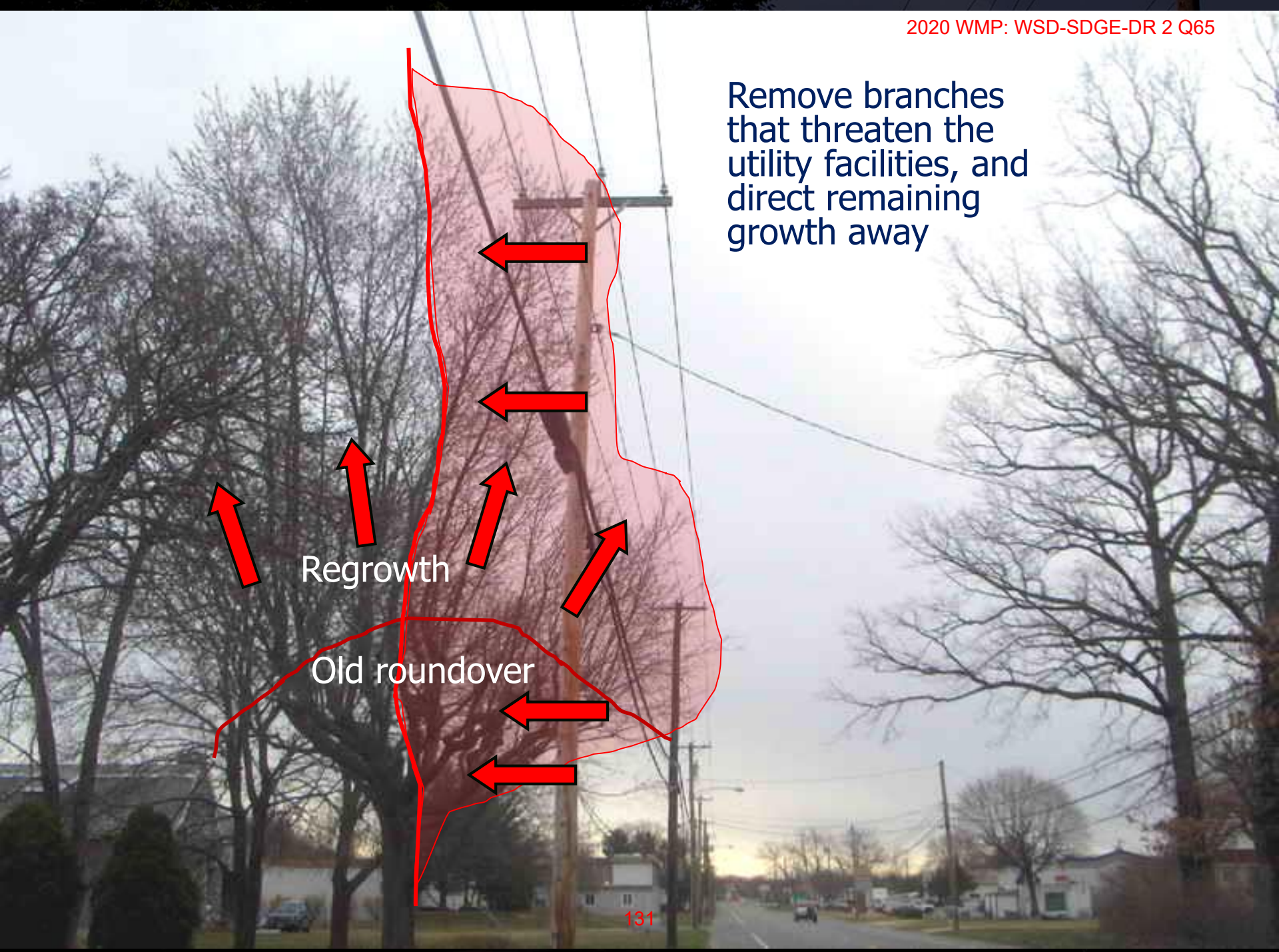
- Stub will sprout and be prone to decay
- Make proper cut to lateral branch

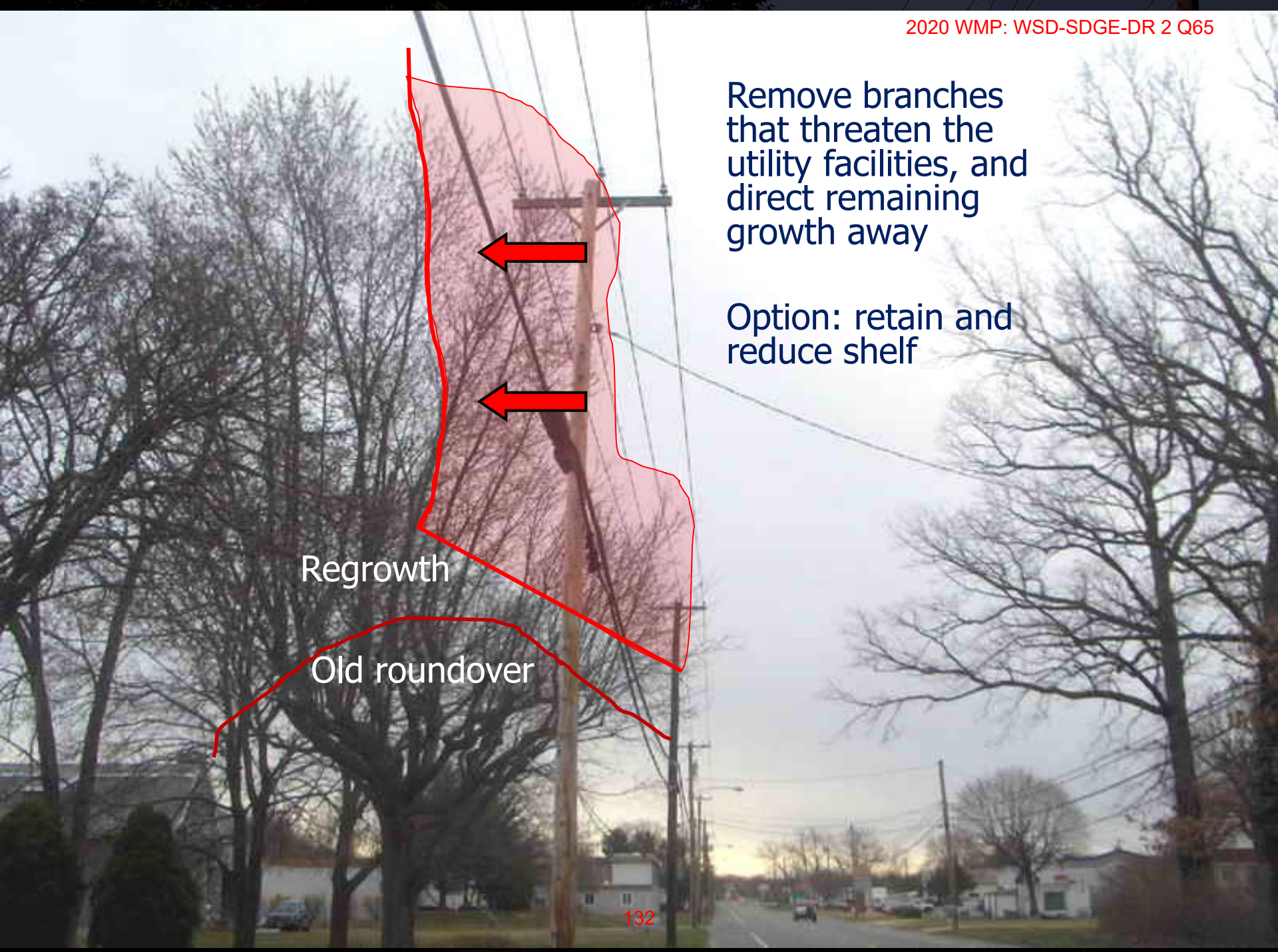
Too many unnecessary cuts
Remove entire branches to direct growth away from utility facilities

Is this enough clearance?

Maybe the whole tree needs to come down…


Best approach will depend on:
• Priority of line
• Condition of tree

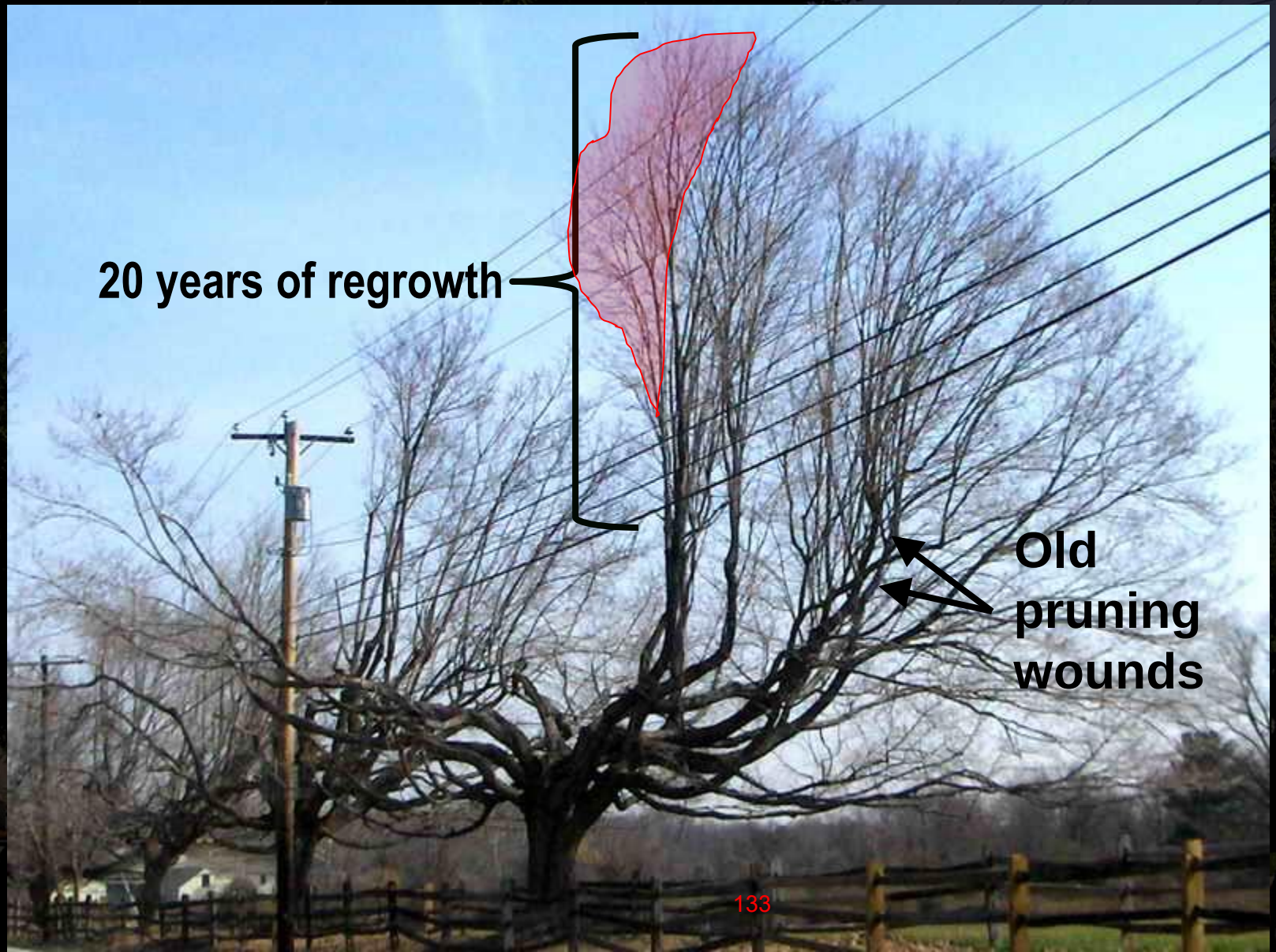

Remove branches that threaten the utility facilities, and direct remaining growth away
Regrowth
Old roundover

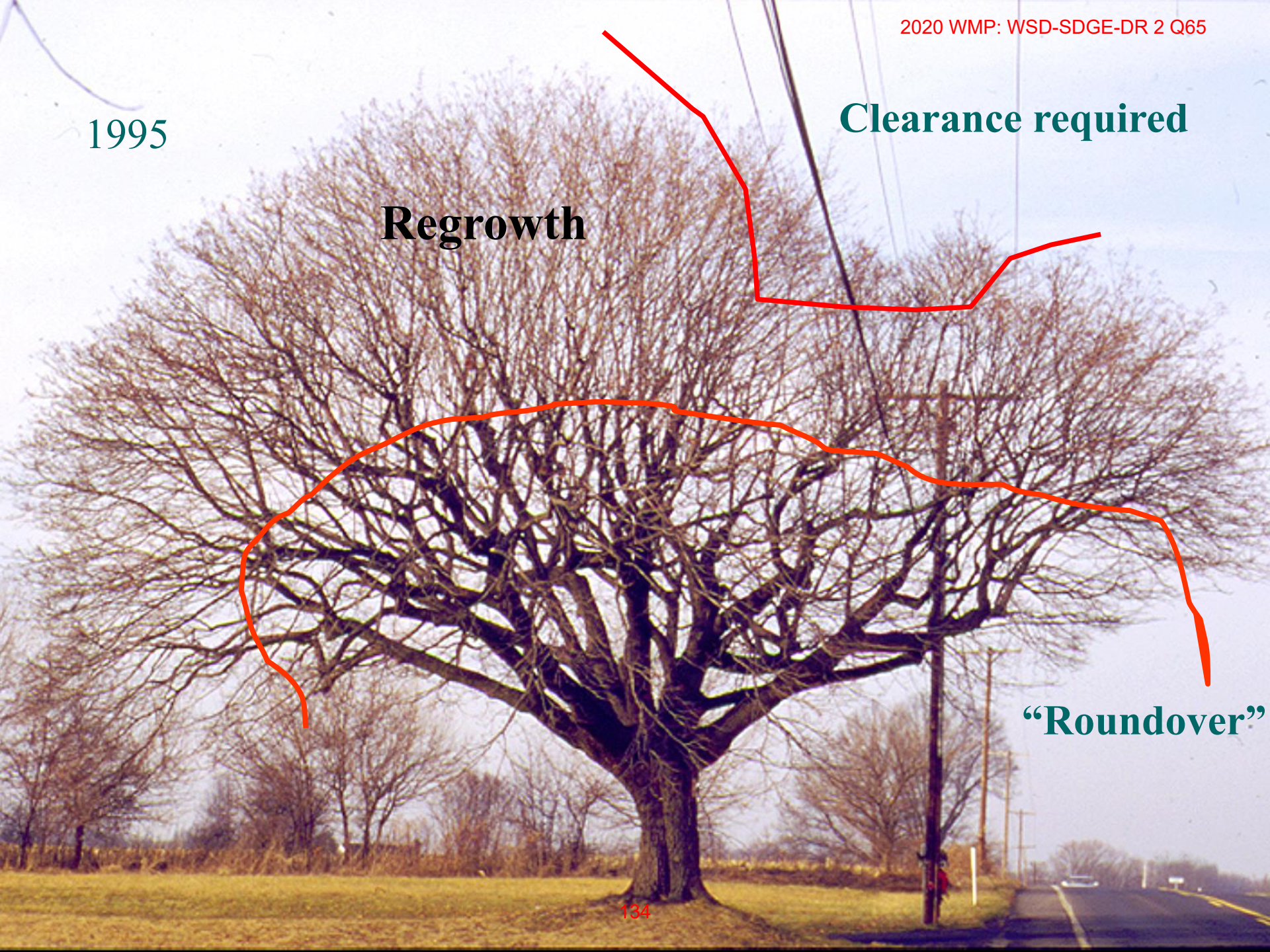


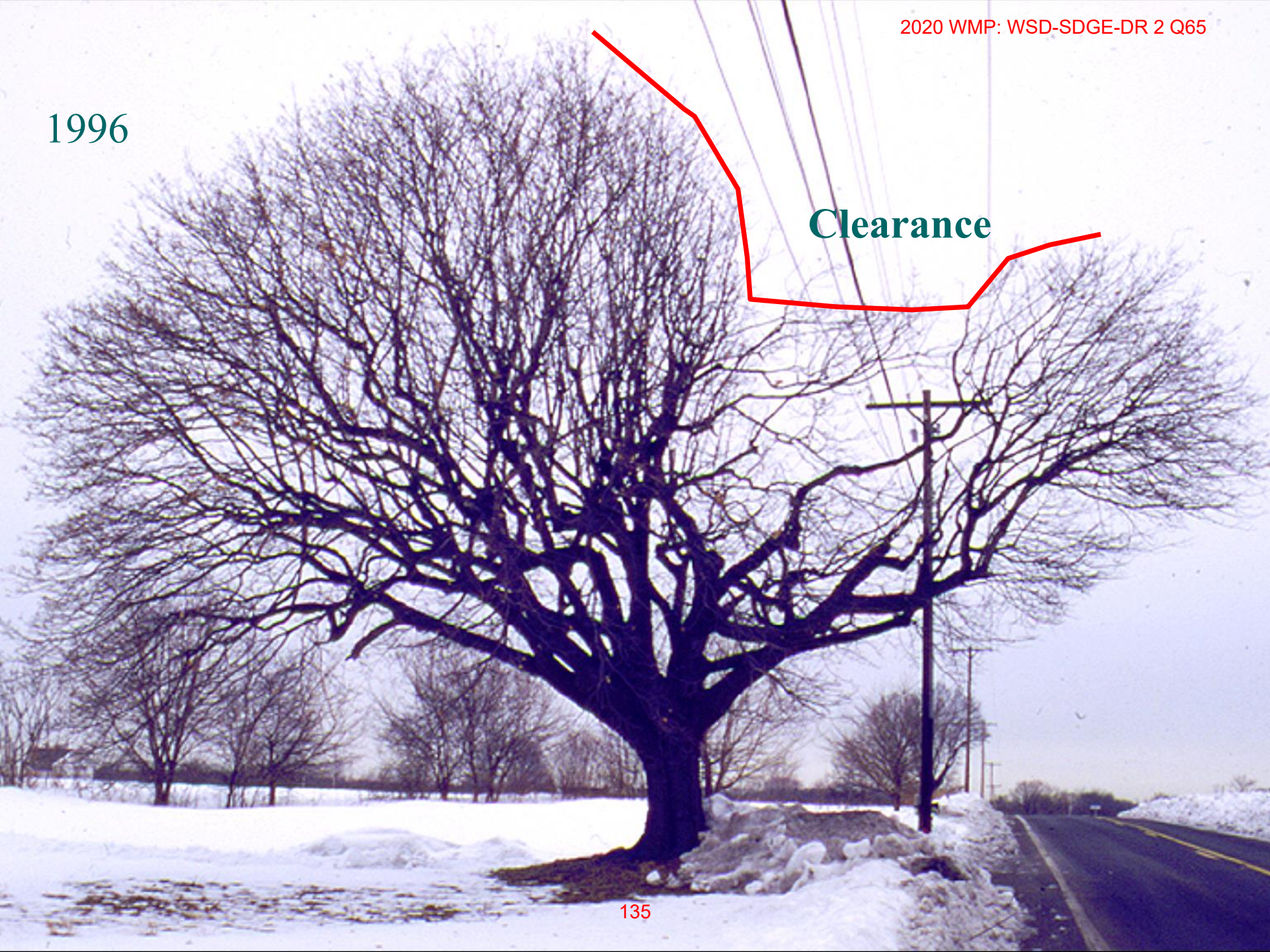
Remove branches that threaten the utility facilities, and direct remaining growth away

Option: retain and reduce shelf

Long-term effects of directional pruning




1995
Clearance required
Regrowth
"Roundover"


1996
Clearance

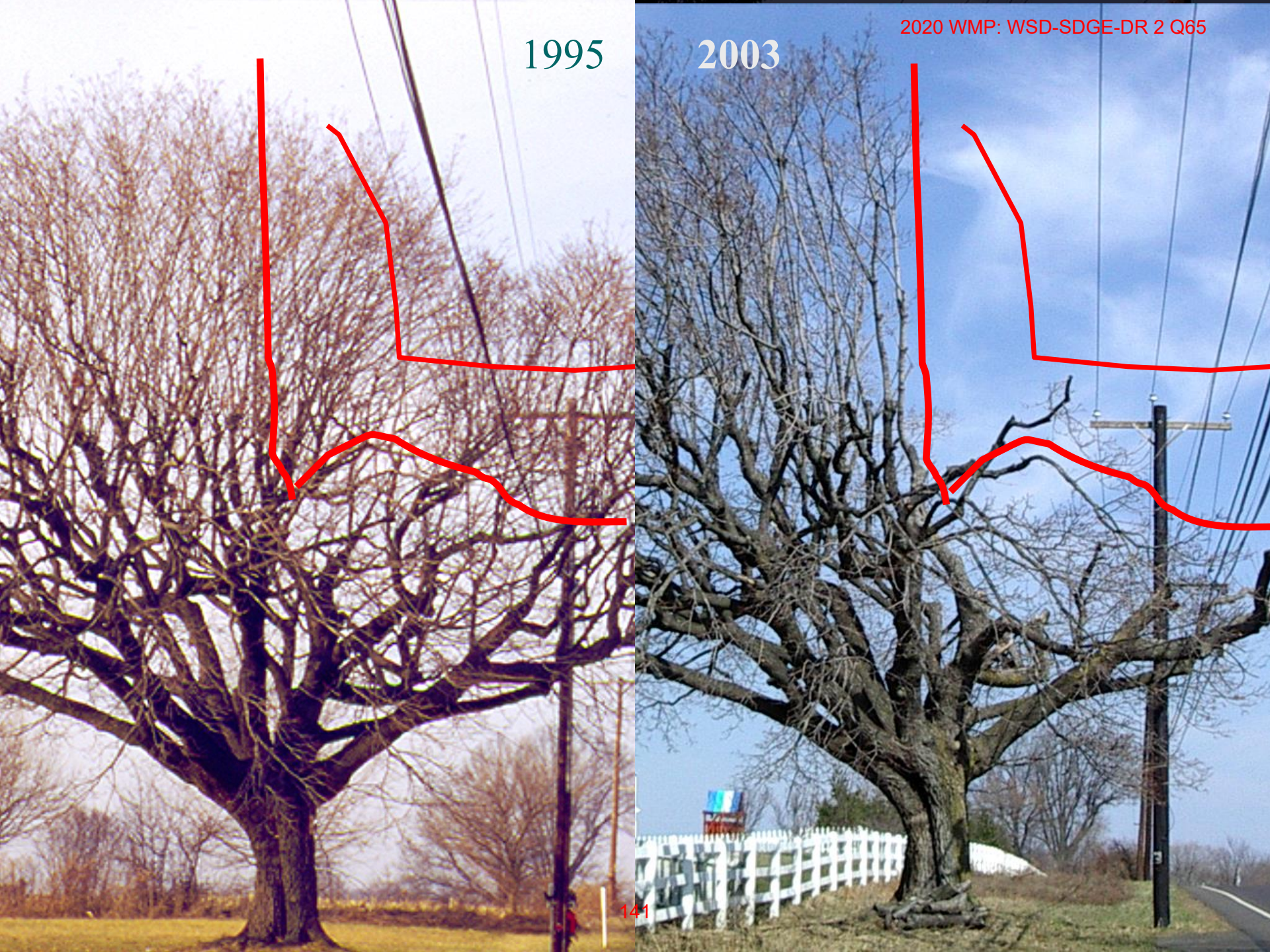
1998

1999

2001
Communication lines added using stub cuts

2002
After 6 years, growth is encroaching

2020 WMP: WSD-SDGE-DR 2 Q65
2003
140


1995
2003
2020 WMP: WSD-SDGE-DR 2 Q65

2008

Increased watersprout growth due to stub cuts and more crown removed
Cleared over roadway

2010

2012

1995

2012
Tree is larger, older and more decayed

1995

1996

2003

2012

Trees grow and change over time

- Adjust accordingly

2020 WMP: WSD-SDGE-DR 2 Q65
134

Summary

Professional Practice

- Is expected
- Improves results and reduces risk of outages and wildfire

Trees and sites vary:

- Species, size, shape
- Growth rates
- Response to pruning
- Voltage, construction, placement on circuit, exposure, etc.

Know your trees, and prune accordingly

2020 WMP: WSD-SDGE-DR 2 Q65

Conclusion

- Take pride in your work
  - ➢ We provide a vital service!
- Comply with industry standards and utility specifications
- Answer customer questions
  - What we are doing and why
  - Emphasize *their* safety and service reliability
- Be professional
  - Know your business
  - Make good decisions
  - Set a good example
  - Work safely

N343WB

Thanks!

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TECHNICAL SERVICES
Resources for Vegetation Management