



UNIVERSITY OF MINNESOTA EXTENSION

MAKING A DIFFERENCE IN MINNESOTA: ENVIRONMENT + FOOD & AGRICULTURE + COMMUNITIES + FAMILIES + YOUTH

# Considerations When Remodeling Barns

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# PURPOSE OF ANIMAL HOUSING

- Facilitate the management plan
- Provide
  - A clean, dry, and comfortable environment
  - Plenty of fresh air
  - Easy access to clean fresh feed and water
  - Adequate lighting for observation and animal care



# ADDITIONAL HOUSING EXPECTATIONS

- Labor efficient by making animal care tasks easy to do with proper tools and equipment
- Economical – provide value
- Safe for workers and animals
- Environmentally friendly



# REMODELED FACILITIES

- Expected to meet similar functional expectations as new facilities
- Good planning and a critical eye help make a remodeled facility be cost-effective, labor-efficient and a useful space



# ANIMAL CARE TASKS

- Preparing and providing feed
- Providing fresh air and water
- Observing
- Add bedding
- Removing soiled bedding
- Treating animals
- Other





# REMODELING AND REPURPOSING

- Start with existing building at a specific location
- To make building more useful to operation
- Provide useful space that fits management plan and is easy to use



# CONVERT 2-STORY DAIRY BARNS TO

- Low-cost milking parlor
- Holding pen for milking parlor
- Maternity pen and special needs area
- Calf or heifer housing





# CONVERT POLE BARN OR SHEDS

- Animal housing
- Freestall barn
- Far-off or close-up pen
- Maternity pens and special needs area
- Calf or heifer housing



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# STRUCTURAL INTEGRITY/SOUNDNESS

- Foundation
- Walls
- New doorways
- Rafters and trusses
- Roof



# LOCATION

- Avoid remodeling buildings in low or wet areas
- Consider daily and seasonal traffic patterns at location (people, trucks and equipment, animals)



# CEILING HEIGHT

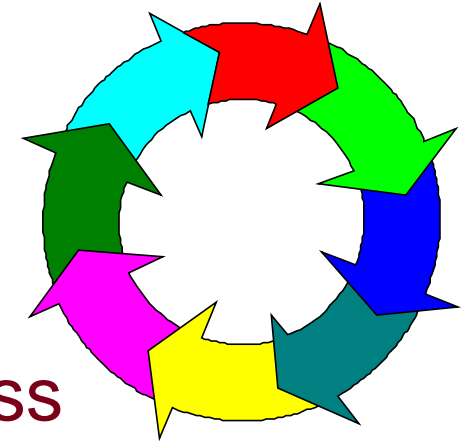
- Limits equipment (skid loader) access
- Creates ventilation & lighting challenges
- If remove ceiling – hire structural engineer to design bracing to maintain structural integrity



# SYSTEMS THINKING

- Animal flows to and from
- Bedding
- Manure accumulation, removal and storage
- People access and labor efficiency
- Feeding

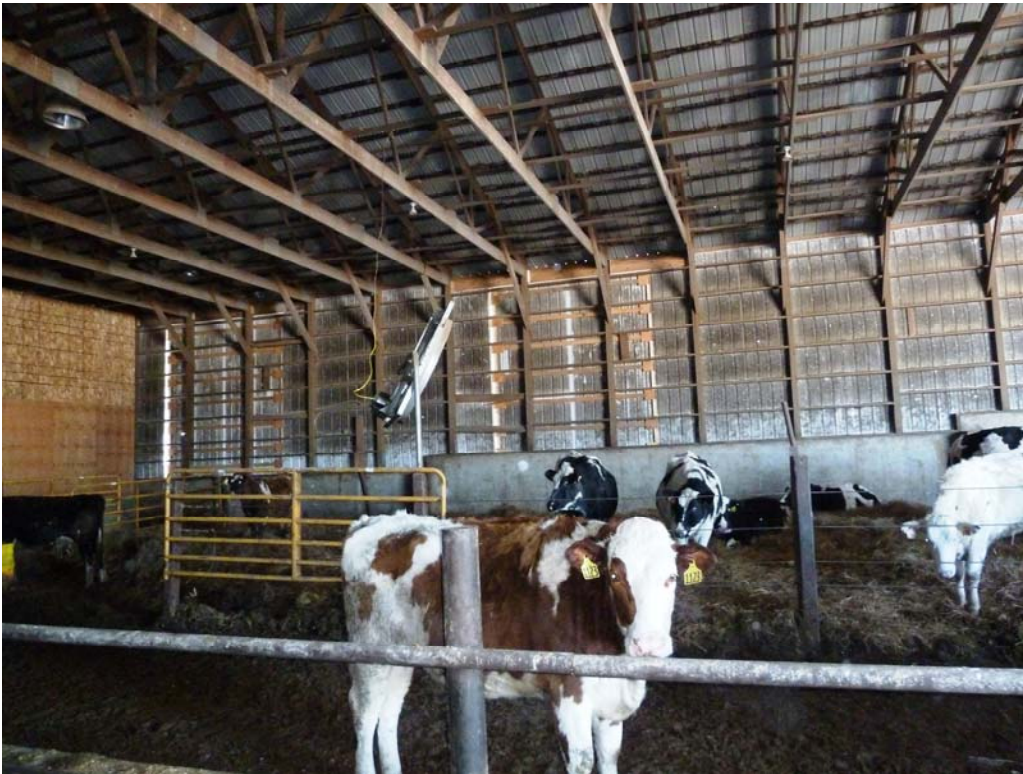
- Water access
- Equipment access
- Electricity availability





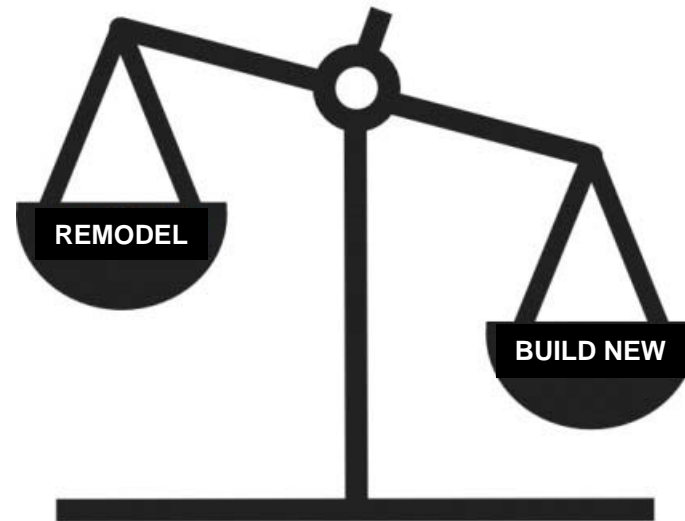
# SPACE NEEDED FOR NEW USE

- Depends on planned use



# REMODELING COSTS

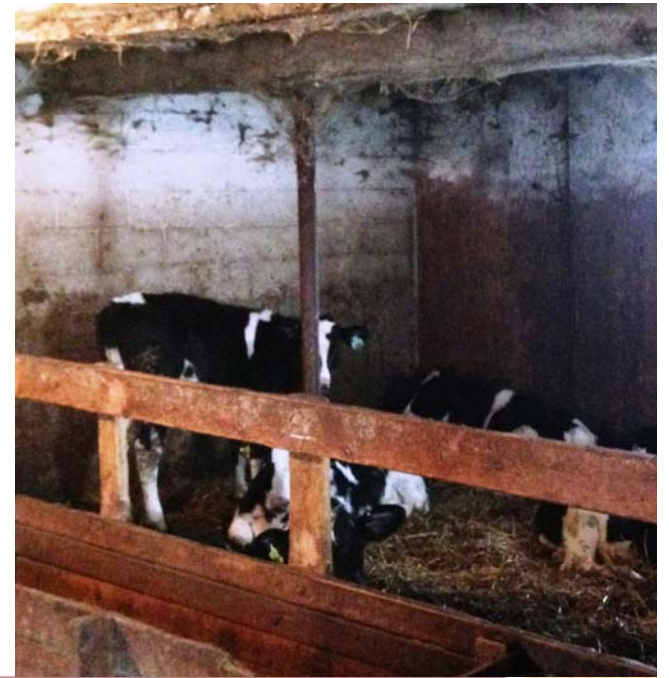
- Old rule of thumb: Build new if remodeling costs exceed two-thirds ( $2/3$ ) cost of new
- Be wary when remodeling cost approach 50% of new





# CAREFUL PLANNING

- Assess existing structure critically
- Changes required
- Quality of space for new use
- Costs

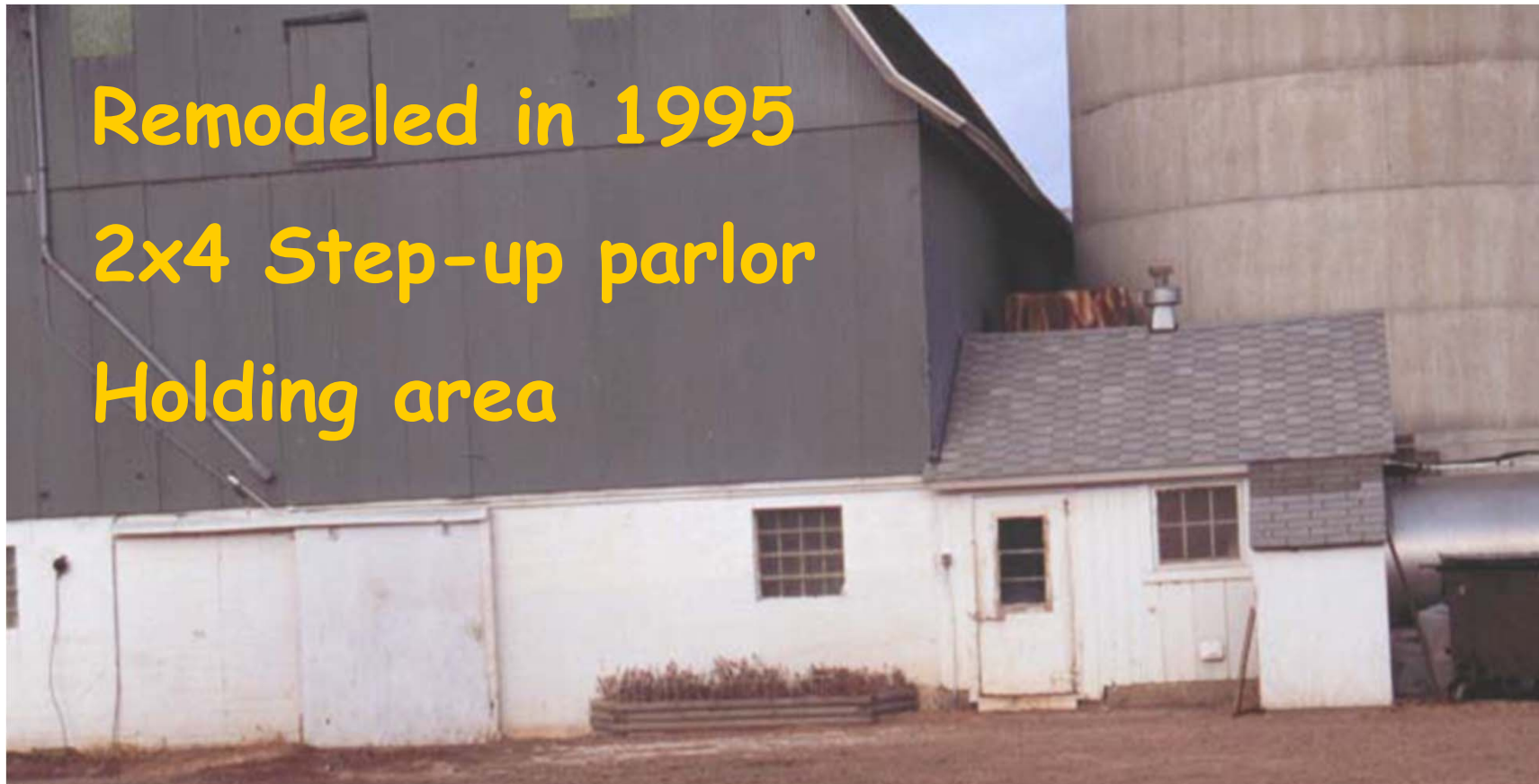


# CHICKEN BARN TO CALF HOUSING





# REMODELED 2-STORY DAIRY BARN



# 2-STORY DAIRY BARN TO MILKING CENTER

## WHERE WILL THE NEXT BARN GO?



# REMODELING CAN BE SUCCESSFUL

- Good and detailed planning
- Clear vision of new space
- Critical evaluation of existing building
- Careful demolition and construction







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**Driven to Discover<sup>SM</sup>**

# Questions?



## Bioproducts and Biosystems Engineering

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