
Transaction costs of nonpoint source water quality credits:

Implications for Chesapeake Bay trading programs

Gwen Rees & Kurt Stephenson

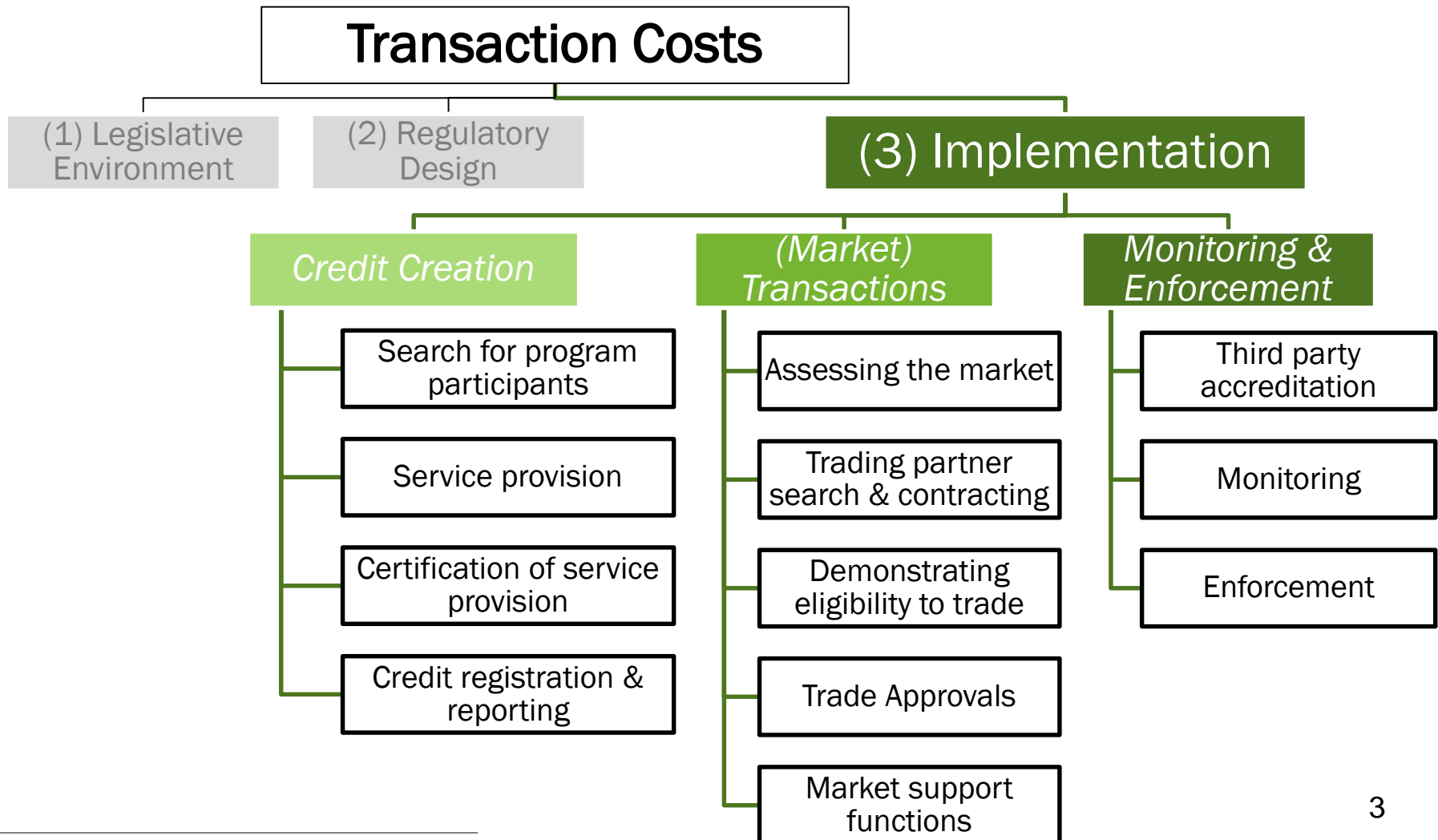
**Department of Agricultural & Applied Economics
Virginia Tech**

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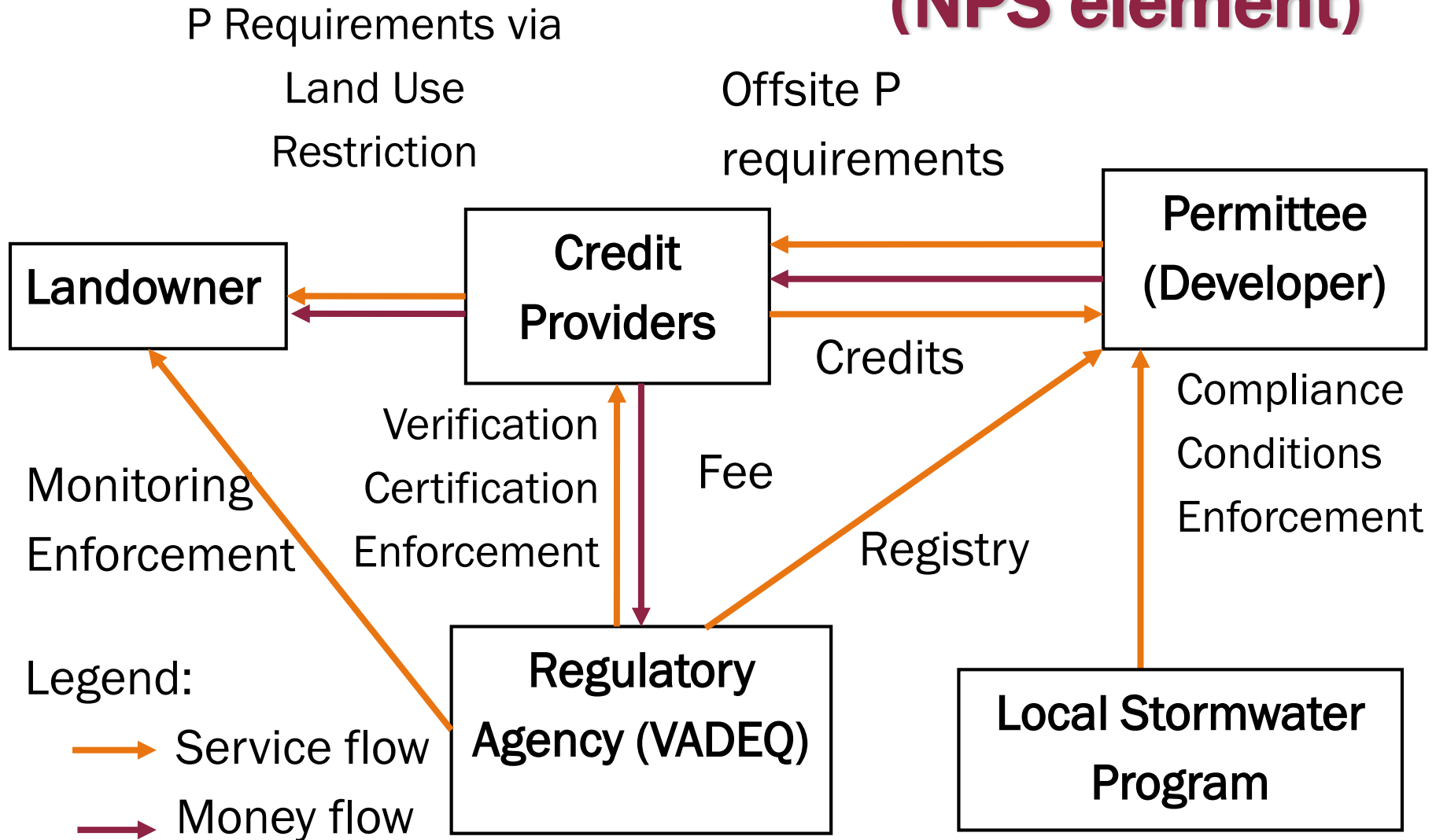
Objectives

- What range of transaction costs might be associated with nutrient trading programs?
- Using a Bay State case study (Virginia), what are transaction costs now and what might they be in an expanded program?
- To what degree can alternative designs lower transaction costs?

Conceptual Framework: Transactions costs of Implementation



Virginia Nutrient Trading (NPS element)



Virginia Credit Projects

- **15 NPS credit projects supplying 1,637 permanent P credits** (VADEQ registry as of 8/22/2014)
 - 14 out of 15 projects are land conversion (typically ag. land to forest)
 - Permanent land protection required for land conversion (for SW land disturbing activities)
 - Performance straight-forward (native 400 stems/ac)
 - Pending VA credit certification rule specifying application fees to cover costs

Current TCs: VA WQT program

➤ VADEQ:

- Site visits: ~\$550 per project
- Credit administration costs are minimal (process fairly straightforward)
- Monitoring costs are minimal (remote monitoring)
- **Service provider:** *“cost and time to move projects through the process is straightforward and the costs are modest compared to those incurred in other environmental service markets.”*

Current TCs: VA WQT program

- **Costs are currently relatively low:**
 - Low complexity of generating credits
 - Land conversion projects do not involve the implementation of baseline practices
 - Clear and uncomplicated procedures to quantify credits
 - Low-cost monitoring regime

What might future TCs look like?

➤ Potential future changes:

- New sources of demand (MS4s) may need term credits
- Working lands participation

➤ If VA WQT program expands:

- Higher complexity of generating credits (e.g. fixed-term credits generated by ag. management practices or structural BMPs)
- Frequency and/or cost of monitoring increases?

What might future TCs look like?

- Severe data limitations (confidentiality, lack of experience, etc.)
- Method:
 - Gather data from other water quality programs (Ohio (EPRI), Oregon (Willamette Partnership))
 - Consult with credit providers
 - Use NRCS data on transactions costs of getting conservation on the ground

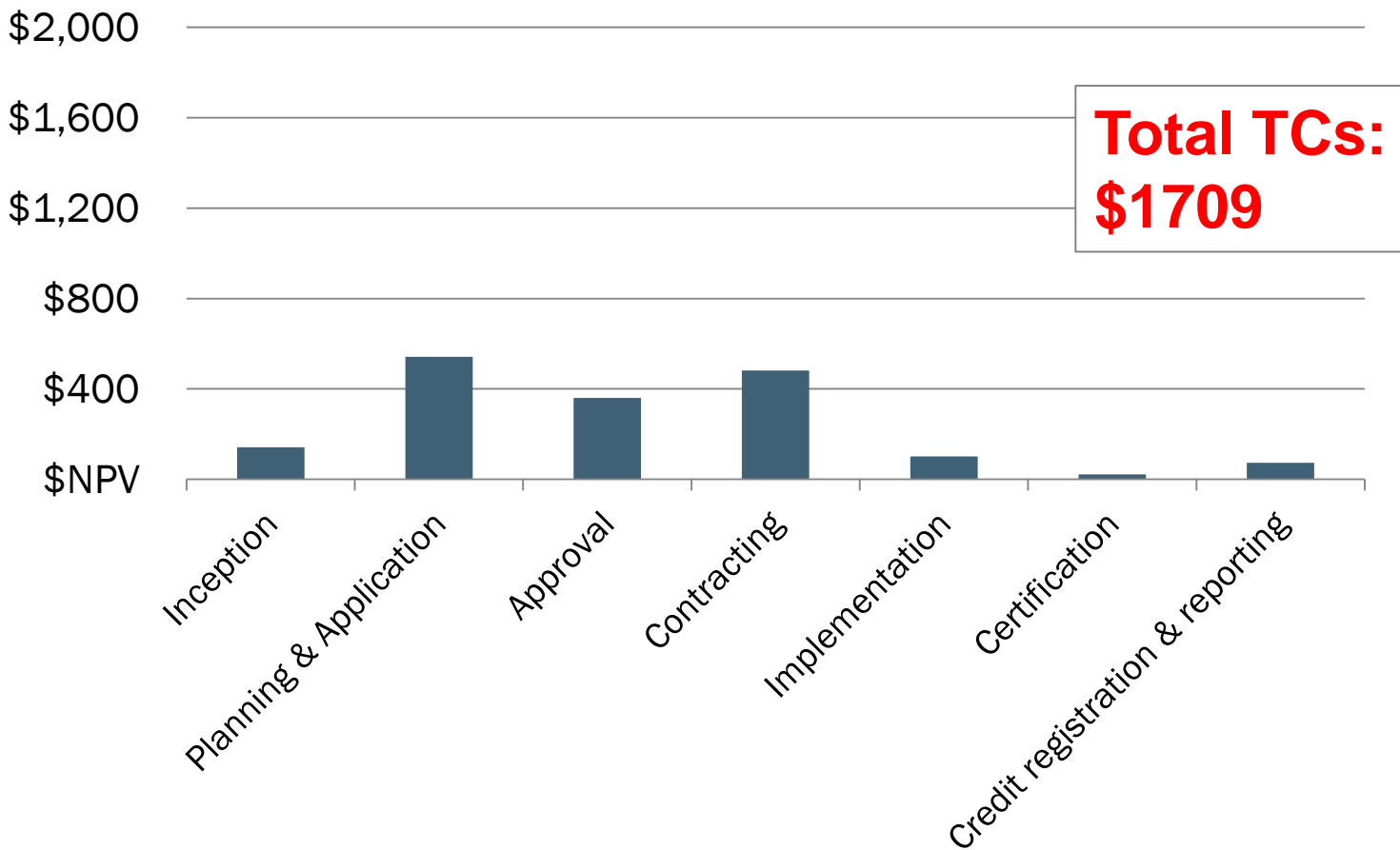
Analysis of future TCs

- Which transactions costs did we focus on?
 - Costs of “Credit Creation”
 - Costs of ex-post certification and monitoring
- Costs borne by whom?
 - TC costs by category, regardless of who bears them
 - Costs faced by credit providers

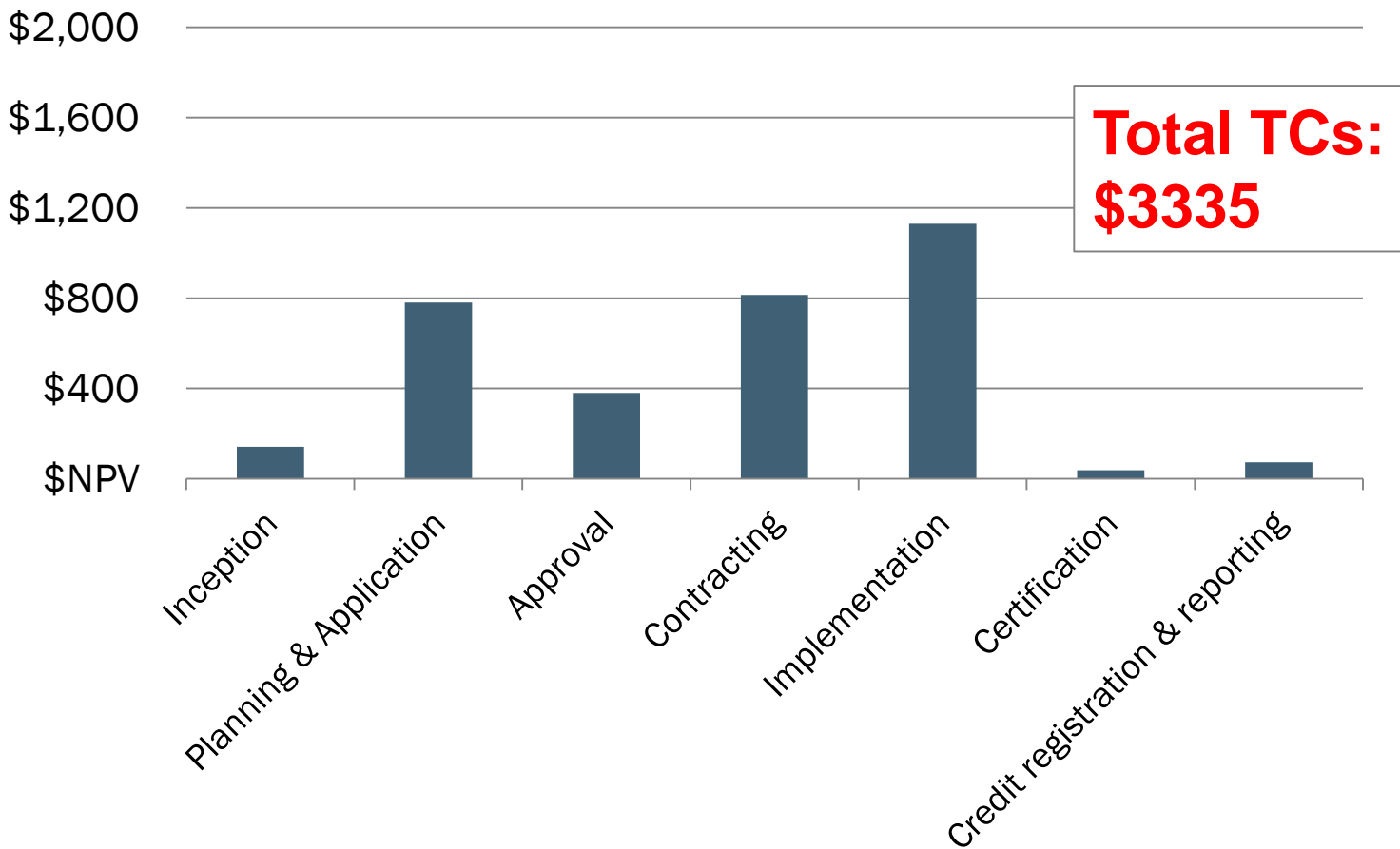
Future TCs: “Credit Creation”

- Transactions costs of credit creation depend on the type of practice(s) used
- Estimated TCs using NRCS interviews/data:
 - Simple project (e.g. ag. land conversion)
 - Moderate project (e.g. livestock exclusion fence + watering)
 - Complex project (e.g. livestock waste management + prescribed grazing)

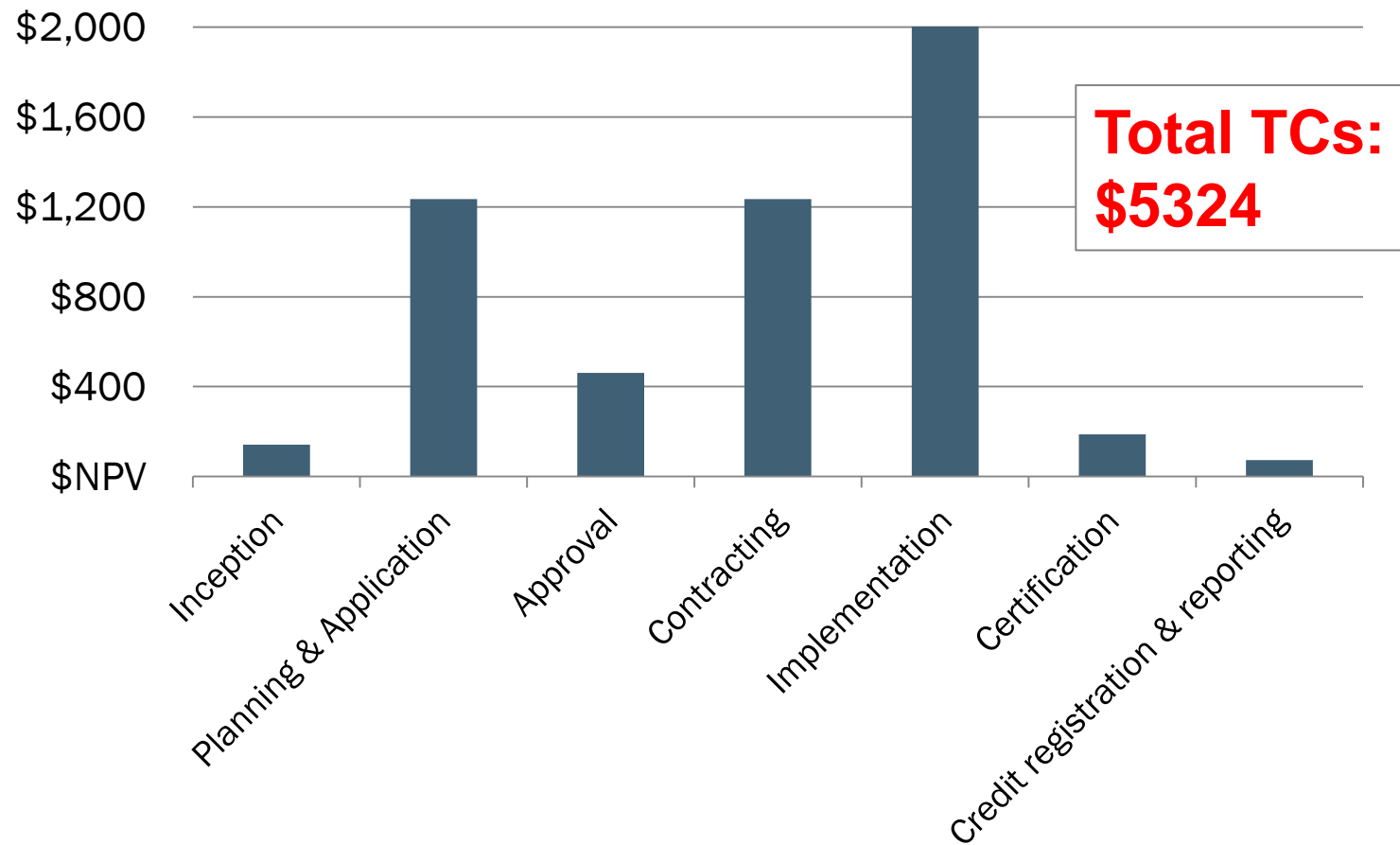
Credit Creation - simple project



Credit Creation - medium project

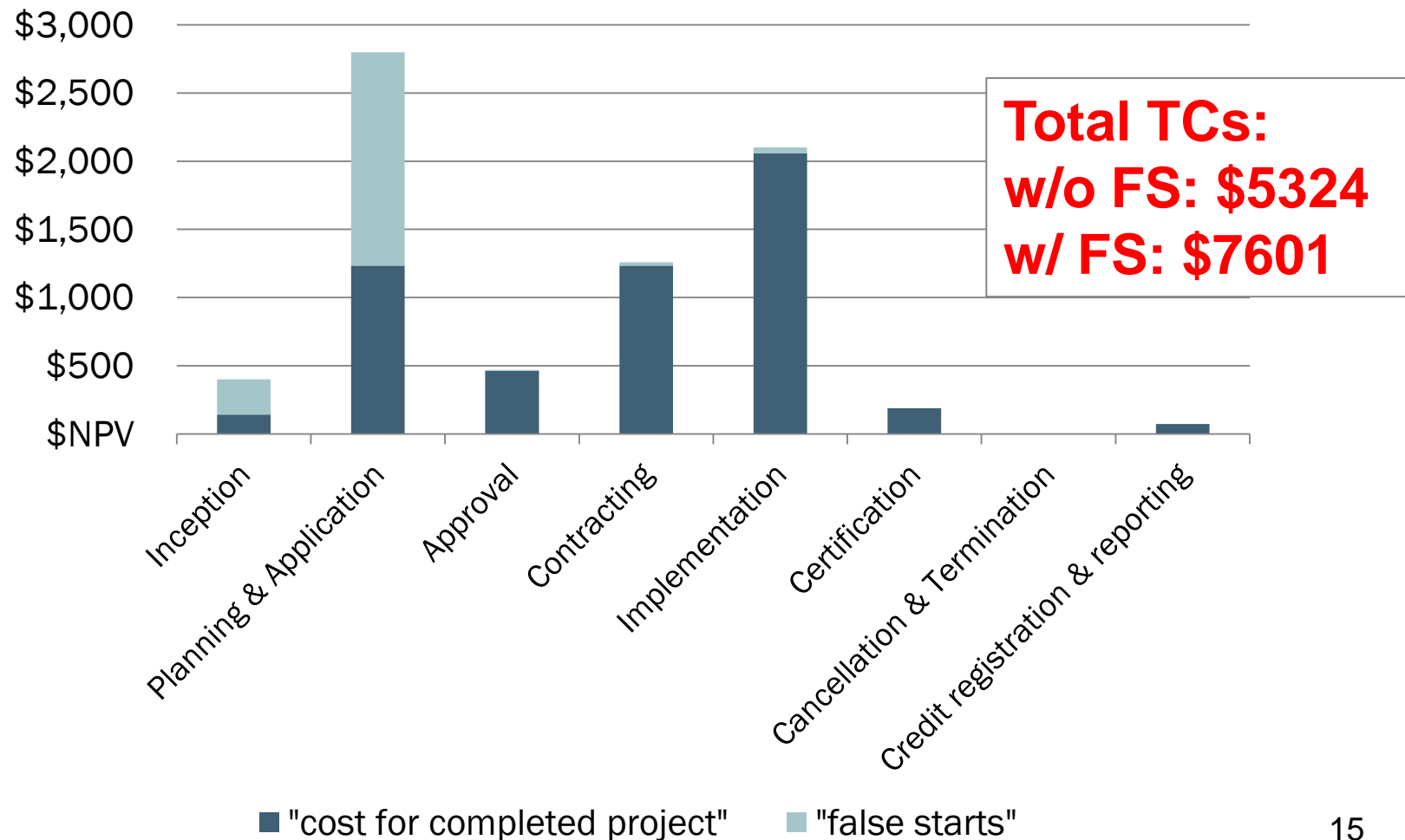


Credit Creation - complex project



Credit Creation

- **complex contract** + “false starts”

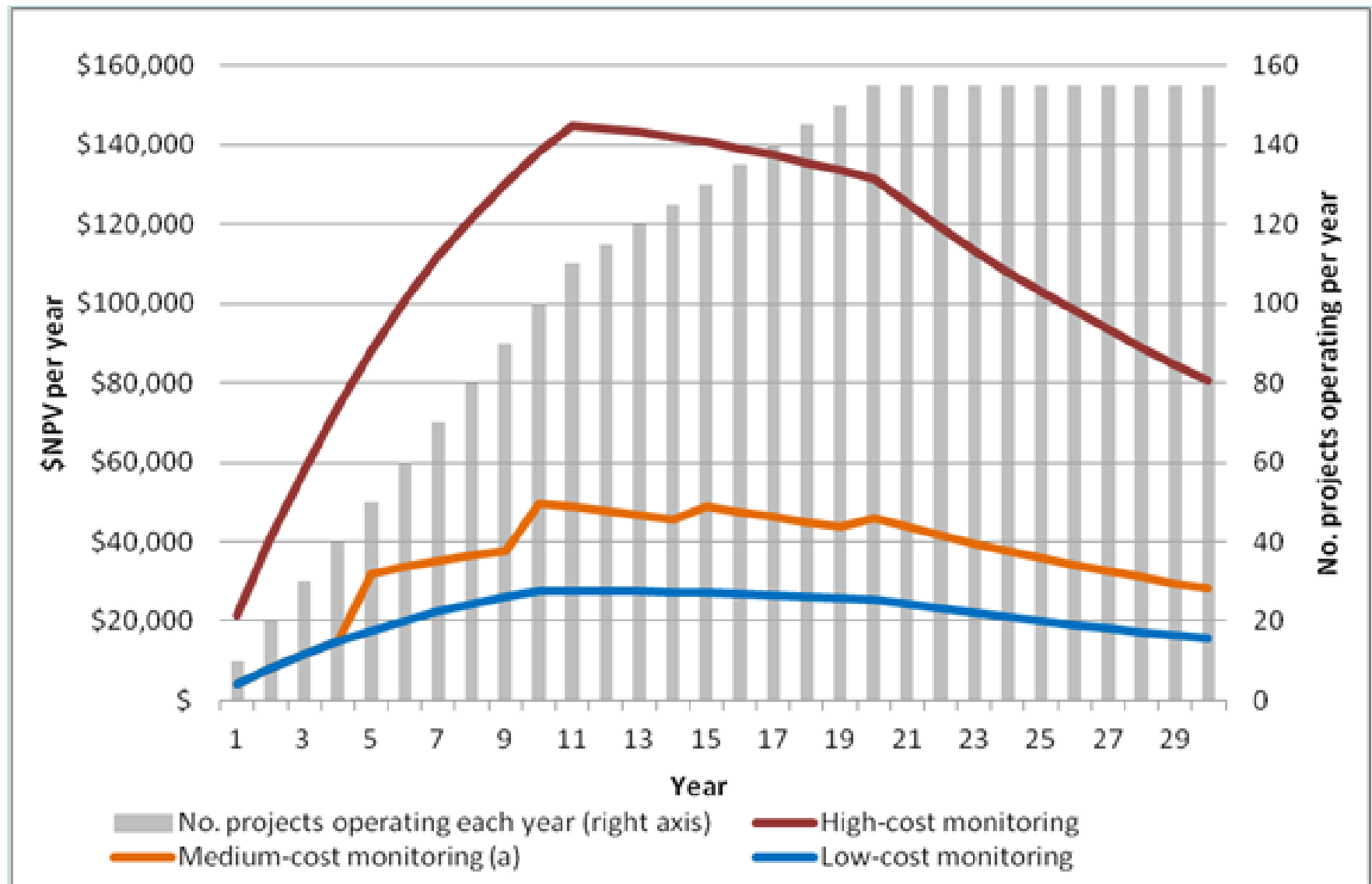


Future TCs:

Ex-post Monitoring

- **2 approaches used by WQT programs:**
 - **Full “boots-on-the-ground”:** regulator / third party verifier visits site
 - **Remote:** information provided by credit provider; use of remote sensing to check site
- **Alternative monitoring regimes:**
 - **Low cost** (current VADEQ): remote annual monitoring
 - **Medium costs** (Willamette Partnership): full every 5 years + remote in between
 - **High cost** (EPRI, Ohio): full every year

Cost of monitoring regimes



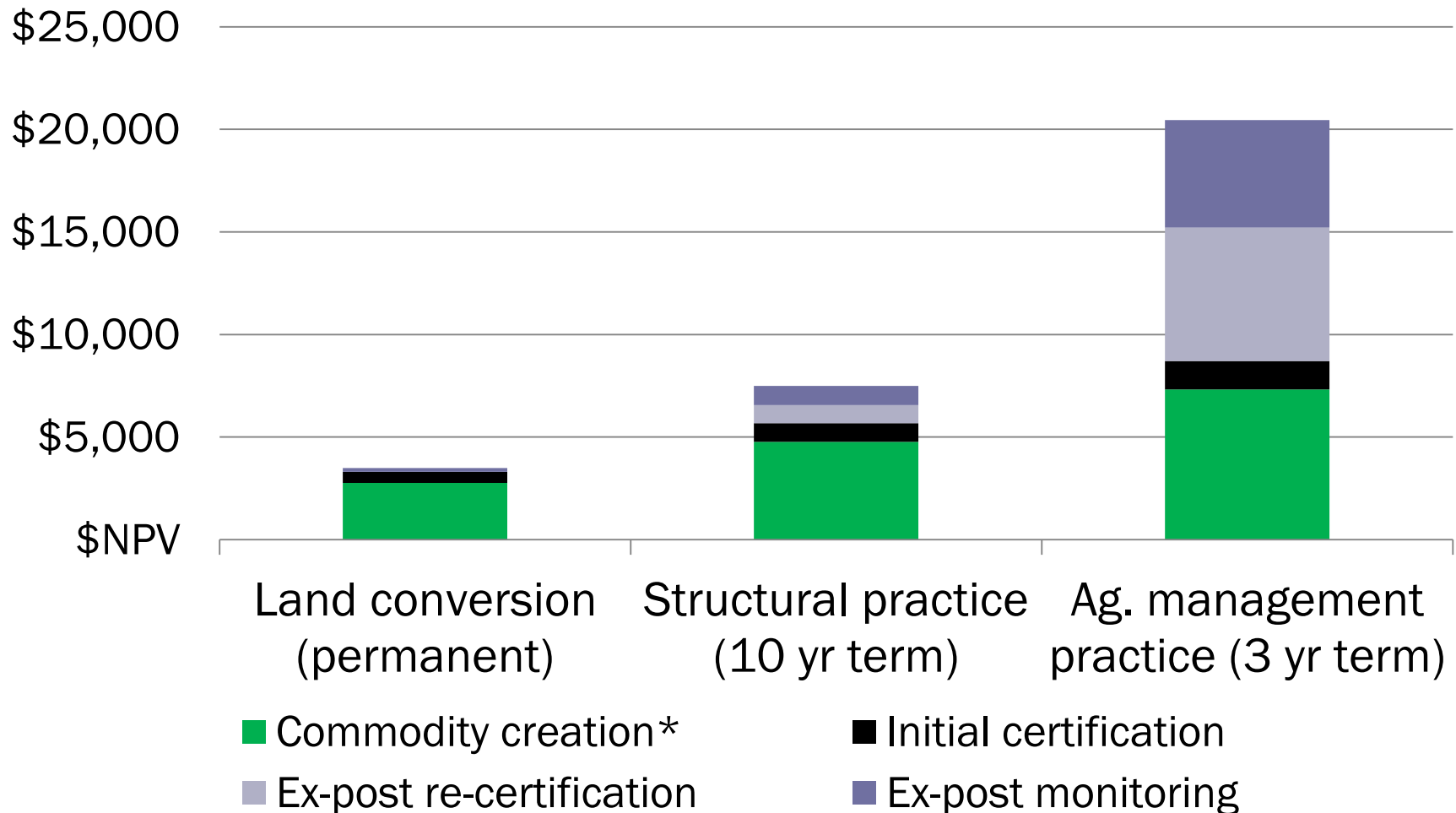
Transaction costs

Summarizing

Putting this all together, what do we know about total TCs?

Transactions costs

60 P credits over 30 years



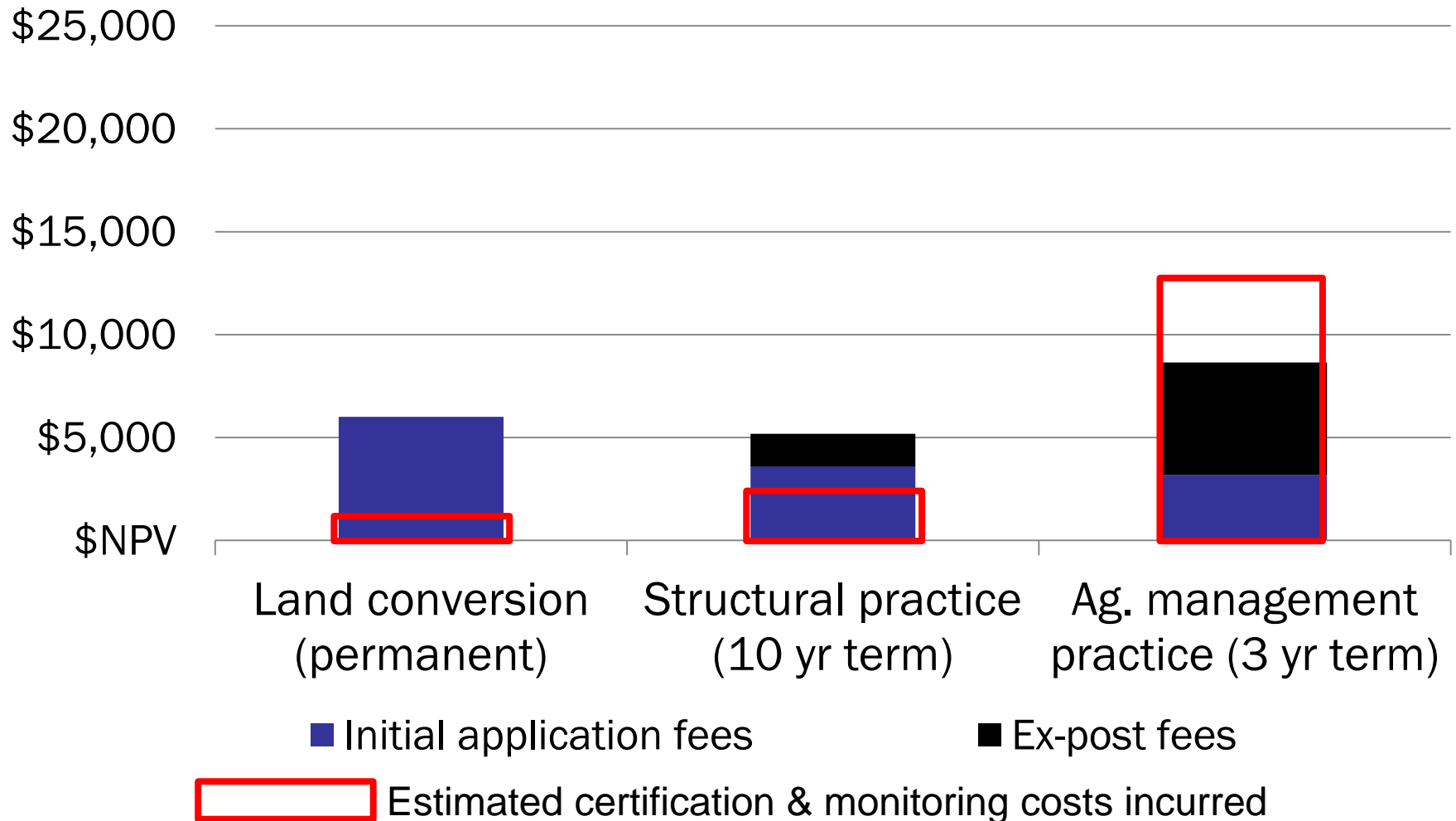
*includes "false starts"

Implications for Agency cost recovery

What do we know about total TCs and how they are distributed across parties?

Costs faced by credit providers

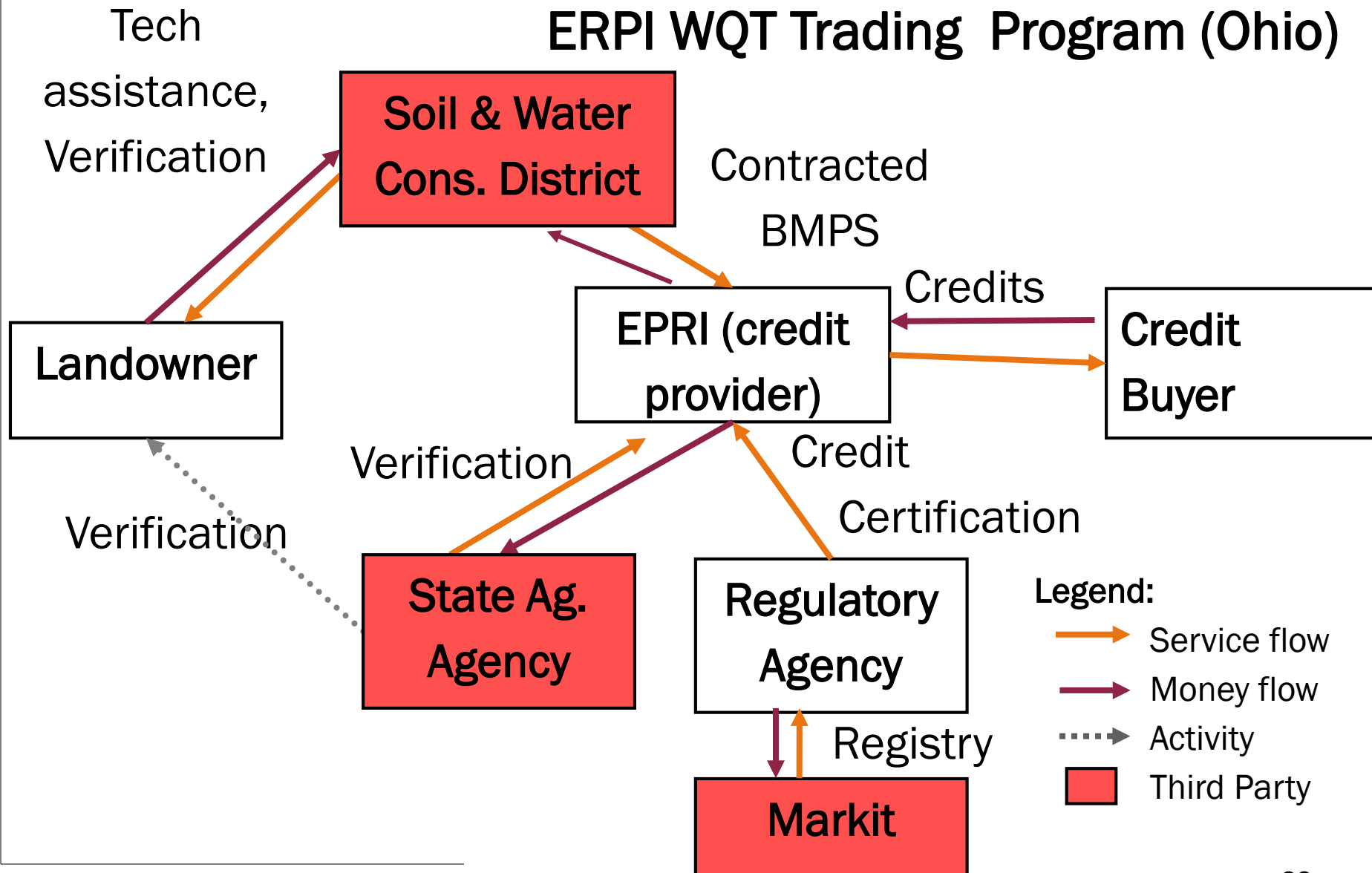
60 P credits over 30 years



*based on hours for credit creation provided by NRCS

Use of third parties

ERPI WQT Trading Program (Ohio)



Transaction costs

Use of third parties

Benefits:

- ✓ Lower search costs
- ✓ Specialized service provision
- ✓ Mitigate market risks
- ✓ Lower demands on regulator staff time (cost shifting)

Costs:

- ✗ Additional relationships / contracts to manage
- ✗ Conflict of interest?
- ✗ Different objectives re: conservation

Transaction costs:

What have we learned?

- TCs of creating credits from **management** and **structural BMPs** significantly higher than for credits from **land conversions**
- **Verification protocols** are a significant driver of transactions costs
- There are both **benefits** and **costs** of using **third parties** in WQT programs



Thank you

Gwen Rees: grees@vt.edu

Kurt Stephenson: kurts@vt.edu

**Transactions costs of nonpoint source water
quality credits**

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