



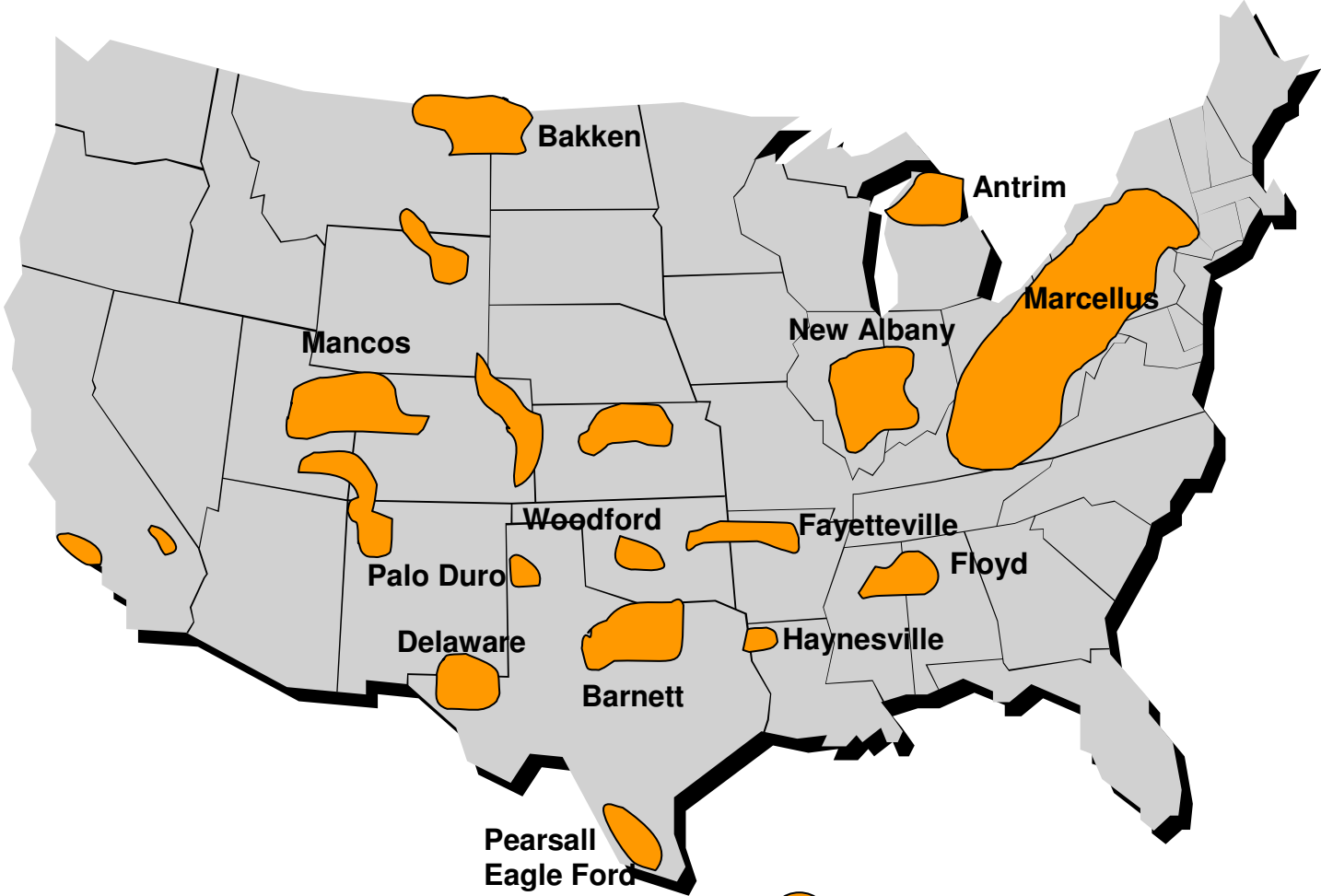
An Update on Shale Activity In the US

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Howard
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Emerging Shale Plays in the US

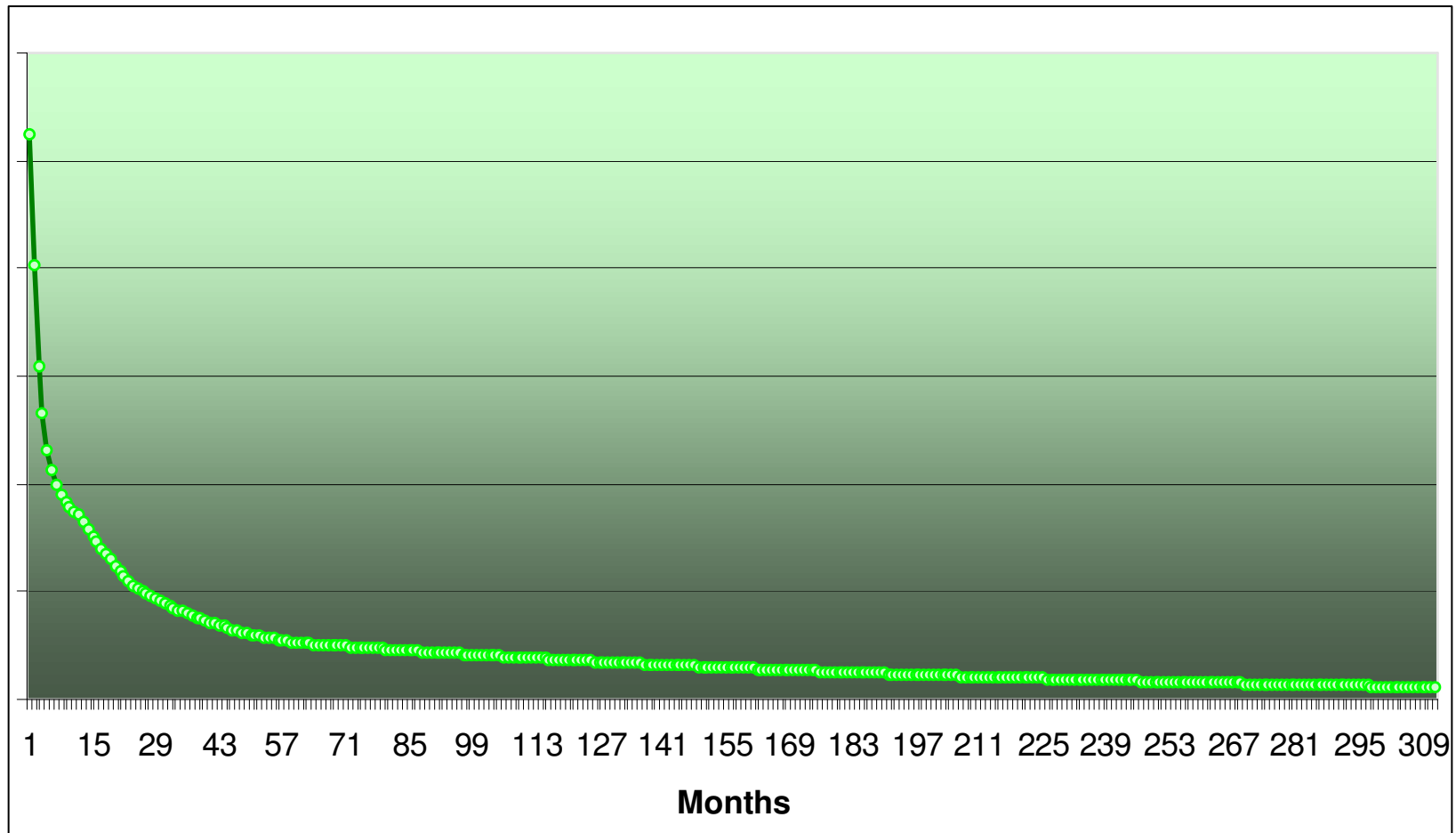


Source: Howard Weil

Shale Plays



A Typical Shale Gas Decline Curve



Source: Howard Weil

Barnett Shale Assumptions

Core Development

❖ Depth TVD	5,400' – 9,600'
❖ MD (horizontals)	8,000' – 16,500'
❖ Thickness	200' – 500'
❖ Total organic content (TOC)	2.0% - 7.0%
❖ Average log porosity	6.5% - 8.5%
❖ Pressure gradient (psi/foot)	0.42 – 0.52
❖ Water saturation	25% - 35%
❖ Gas-in-place (bcfe/section)	75 – 200
❖ Anticipated recovery factor	25% - 35%
❖ Average EUR/horizontal well (bcfe)	2.5 – 3.0
❖ Average well costs	\$2.6 MM
❖ BTROR	25%

Source: Howard Weil and Various Companies

Fayetteville Shale Assumptions

Development

❖ Depth TVD	1,200' – 7,500'
❖ MD (horizontals)	5,700 – 13,500'
❖ Thickness	50' – 200'
❖ Total organic content (TOC)	2.0% - 5.0%
❖ Average log porosity	4% - 12%
❖ Pressure gradient (psi/foot)	Normal ~0.42
❖ Water saturation	15% - 35%
❖ Gas-in-place (bcfe/section)	30 - 60
❖ Anticipated recovery factor	35% - 40%
❖ Average EUR/horizontal well (bcfe)	2.2 – 3.0
❖ Average well costs	\$3.0 MM
❖ BTROR	20%

Source: Howard Weil and Various Companies

Haynesville Shale Assumptions

Core Development

❖ Depth TVD	10,500' – 13,500'
❖ MD (horizontals)	14,500' – 18,000'
❖ Thickness (net)	150' – 350'
❖ Total organic content (TOC)	3% - 5%
❖ Average log porosity	8% - 10%
❖ Pressure gradient (psi/foot)	~0.84
❖ Water saturation	15% - 20%
❖ Gas-in-place/section (bcfe/section)	150 – 250
❖ Anticipated recovery factor	25% - 30%
❖ Average EUR/horizontal well (bcfe)	6.5
❖ Average well costs	\$7.0 MM
❖ BTROR	40%

Source: Howard Weil and Various Companies

Marcellus Shale Assumptions

Development

❖ Depth TVD	1,500' – 8,500'
❖ MD (horizontals to date)	9,500' – 14,500'
❖ Thickness (net)	25' – 250'
❖ Total organic content (TOC)	5.3% - 7.8%
❖ Average log porosity	5.5% - 7.5%
❖ Pressure gradient (psi/foot)	0.42 – 0.7
❖ Water saturation	12% - 35%
❖ Gas-in-place/section (bcfe/section)	30 – 150
❖ Anticipated recovery factor	30%
❖ Average EUR/horizontal well (bcfe)	4.2
❖ Average well costs	\$4.5 MM
❖ BTROR	45%

Source: Howard Weil and Various Companies

Woodford Shale Assumptions

Development

❖ Depth TVD	6,000' – 14,000'
❖ MD (horizontals)	13,000' – 21,000'
❖ Thickness (net)	100' – 220'
❖ Total organic content (TOC)	3% - 10%
❖ Average log porosity	3% - 6.5%
❖ Pressure gradient (psi/foot)	~0.48
❖ Water saturation	10%
❖ Gas-in-place/section (bcfe/section)	60
❖ Anticipated recovery factor	50%
❖ Average EUR/horizontal well (bcfe)	6.3
❖ Average well costs	\$9.0MM
❖ BTROR	26%

Source: Howard Weil and Various Companies

What To Look For In 2010

Supply

- ❖ Rig Count
- ❖ Drilling Efficiencies
- ❖ Conventional vs. Unconventional Finding Costs

Demand

- ❖ GDP Growth
- ❖ Industrial Demand
- ❖ Coal vs. Gas
- ❖ LNG Imports