

**AAPG Annual Convention
Salt Lake City, Utah
May 11-14, 2003**

James S. Jackson, David Percy, and Michael Cummings, Portland State University, Portland, OR

An Assessment of Hydrocarbon Resources on Federal Lands in Western Washington State

Eocene sediments deposited west of an ancestral Cascade Range include a coal-bearing sequence covering much of the Puget Lowland. To the west, the terrestrial deposits pass into marginal and shallow marine deposits. Syn-depositional normal faulting and strike-slip faulting are evident in most basins. Eocene volcanism locally effected sedimentation. Subsidence and a low geothermal gradient continued into the Pliocene and were followed by extensive Pleistocene glaciation. At present, active faulting affects the northern Puget Lowland.

Eocene coals and carbonaceous claystones are likely source intervals for a gas-prone petroleum system on the eastern side of the Puget Lowland. Eocene fluvial sandstones overlain by intra-formation claystones are potential reservoir-seal couplets. Faulting in the Eocene and Miocene created potential trapping geometries. Miocene and later burial led to maturation of the potential source interval. The area of the "Southern Cascade Conductor" is interpreted to indicate the presence of a sedimentary sequence buried beneath the volcanic cover, and it also hosts a possible gas play. The western Eocene marine basins are considered to have medium gas resource potential.

An oil play occurs on the southwest Olympic coast where seeps are reported from melange rocks, and where minor production was developed. Along the northern Olympic coast, a high potential gas play is recognized within the Tofino basin where principal targets are located offshore.

The Eocene coals found in the Puget Lowland are considered to be potential targets for CBM production.

A significant fraction of the identified play areas occur in areas of Federal land holdings.