What is claimed is:

1. A continuous process for converting waste plastic into recycle for polypropylene polymerization comprising:

(a) selecting waste plastics comprising polyethylene and/or polypropylene;

(b) preparing a blend of petroleum and the selected waste plastic with the blend comprising about 20 wt. % or less of the selected waste plastic;

(c) passing the blend at a temperature above the melting point of the plastic to a refinery FCC unit;

(d) recovering a liquid petroleum gas C_3 olefin/paraffin mixture from the FCC unit;

(e) separating the C_3 paraffin and C_3 olefin into different fractions; and

(f) passing the C_3 olefin to a propylene polymerization reactor.

2. The process of claim 1, wherein a gasoline and heavy fraction is recovered from the refinery FCC unit.

3. The process of claim 1, wherein the blend of (b) is a hot homogeneous blend of waste plastic and petroleum oil.

4. The process of claim 1, wherein the blend of (b) is a stable blend of waste plastic and petroleum oil prepared by heating the waste plastic above the melting point of the plastic and mixing with the petroleum, and then cooling the blend to a temperature below the melting point of the waste plastic.

5. The process of claim 1, wherein the waste plastics selected in (a) comprise plastics from classification group 2, 4, and/or 5.

6. The process of claim 1, wherein a C_4 stream and a heavy fraction are recovered from the FCC unit distillation column and further processed in the refinery to clean gasoline, diesel, or jet fuel.

7. The process of claim 1, wherein the volume flow of the blend to the refinery FCC unit in (c) comprises up to 50 volume % of the total hydrocarbon flow to the FCC unit.

8. The process of claim 7, wherein the blend flow comprises up to 25 volume % of the total flow to the FCC unit.

9. The process of claim 1, wherein the petroleum in the blend comprises atmospheric gas oil, vacuum gas oil (VGO), atmospheric residue, a petroleum derived oil, a petroleum based material, heavy stock recovered from refinery operations, light cycle oil (LCO), heavy cycle oil (HCO), FCC naphtha, gasoline, diesel, toluene, and/or aromatic solvent derived from petroleum.

10. A continuous process for converting waste plastic into recycle for polypropylene polymerization comprising:

(a) selecting waste plastics containing polyethylene and/or polypropylene;

(b) preparing a blend of petroleum and the selected plastic, with the blend comprising about 20 wt. % or less of the selected plastic;

(c) passing the blend to a refinery FCC unit;

(d) recovering a liquid petroleum gas C_3 olefin/paraffin mixture from the FCC unit;

(e) separating the C_3 paraffin and C_3 olefin into different fractions;

(f) passing the C_3 olefin to a propylene polymerization reactor; and

(g) passing the C_3 paraffin to a dehydrogenation unit to produce propylene.

11. The process of claim 10, wherein a gasoline and heavy fraction is recovered from the refinery FCC unit.

12. The process of claim 10, wherein the blend of (b) is hot homogeneous blend of waste plastic and petroleum oil.

13. The process of claim 10, wherein the blend of (b) is a stable blend of waste plastic and petroleum oil prepared by heating the waste plastic above the melting point of the plastic and mixing with the petroleum, and then cooling the blend to a temperature below the melting point of the waste plastic.

14. The process of claim 10, wherein the waste plastics selected in (a) comprise plastics from classification group 2, 4, and/or 5.

15. The process of claim 10, wherein a C_4 and a heavy fraction are recovered from the FCC unit distillation column and further processed in the refinery to clean gasoline, diesel, or jet fuel.

16. The process of claim 10, wherein the volume flow of the blend to the refinery FCC unit in (c) comprises up to 50 volume % of the total hydrocarbon flow to the FCC unit.

17. The process of claim 10, wherein the blend flow comprises up to 25 volume % of the total flow to the FCC unit.

18. The process of claim 10, wherein the petroleum in the blend comprises atmospheric gas oil, vacuum gas oil (VGO), atmospheric residue, a petroleum derived oil, a petroleum based material, heavy stock recovered from refinery operations, light cycle oil (LCO), heavy cycle oil (HCO), FCC naphtha, gasoline, diesel, toluene, and/or aromatic solvent derived from petroleum.

19. A continuous process for converting waste plastic into recycle for polypropylene polymerization comprising:

(a) selecting waste plastics comprising polyethylene and/or polypropylene;

(b) preparing a blend of petroleum and the selected waste plastic with the blend comprising about 20 wt. % or less of the selected waste plastic;

(c) passing the blend at a temperature above the melting point of the plastic to a feed pretreater unit for a refinery FCC unit;

(d) recovering a heavy fraction from the feed pretreater unit and passing the heavy fraction to a refinery FCC unit;

(e) recovering a liquid petroleum gas C_3 olefin/paraffin mixture from the FCC unit;

(f) separating the C_3 paraffin and C_3 olefin into different fractions; and

(g) passing the C_3 olefin to a propylene polymerization reactor.

20. A process for converting waste plastic into recycle for preparation of lower carbon footprint fuels including gasoline, jet fuel, and/or marine oil, comprising:

(a) selecting waste plastics containing polyethylene and/or polypropylene;

(b) preparing a blend of petroleum and the selected plastic, with the blend comprising about 20 wt. % or less of the selected plastic; and

(c) passing the blend to a refinery FCC unit.