CLAIMS

What is claimed is:

1. A method for producing a renewable jet boiling range fraction, comprising:

contacting a bio-derived feedstock with a hydrotreatment catalyst under effective hydrotreatment conditions to produce a deoxygenated effluent comprising a deoxygenated liquid fraction, the bio-derived feedstock comprising 70 wt% or more of C_{17+} carbon chains;

contacting at least a portion of the deoxygenated liquid fraction with a dewaxing catalyst comprising ZSM-48 and Pt, Pd, or a combination thereof under effective dewaxing conditions to produce an isomerized effluent, the effective dewaxing conditions comprising a severity index of 3 to 9, a weighted average bed temperature of 300°C to 350°C, a pressure of 1.4 MPa-g to 14 MPa-g, and a LHSV of 1.0 hr^{-1} to 8.0 hr^{-1} relative to a volume of dewaxing catalyst; and

separating the isomerized effluent to form a jet boiling range fraction as a bottoms fraction and one or more lower boiling fractions, the jet boiling range fraction comprising a T90 distillation point of 300°C or less, a freeze point of -40°C or less, 40 wt% or more of C_{17}–C_{18} hydrocarbons and 45 wt% or less of C_{14}–C_{17} hydrocarbons and a flash point of 38°C or more.

2. The method of claim 1, wherein a yield of the jet boiling range fraction is 70 wt% or more relative to a weight of the at least a portion of the deoxygenated liquid fraction.

3. The method of claim 1, wherein the jet boiling range fraction comprises 1.0 wppm or less of oxygen.

4. The method of claim 1, wherein the jet boiling range fraction comprises a final boiling point of 300°C or less.

5. The method of claim 1, wherein the bio-derived feedstock comprises 5.0 wt% or less of C_{19+} carbon chains.

6. The method of claim 1, wherein the at least a portion of the deoxygenated effluent comprises 50 wt% or more of C_{17+} n-paraffins.

7. The method of claim 1, wherein contacting the bio-derived feedstock with a hydrotreatment catalyst further comprises contacting at least a portion of the deoxygenated effluent with the hydrotreatment catalyst.

8. The method of claim 1, wherein the at least a portion of the deoxygenated liquid fraction is exposed to the dewaxing catalyst without exposing a liquid portion of the isomerized effluent to the dewaxing catalyst.

9. The method of claim 1, wherein exposing the at least a portion of the deoxygenated liquid fraction to the dewaxing catalyst further comprises exposing at least a portion of the jet boiling range fraction to the dewaxing catalyst.

10. The method of claim 1, wherein a density of the jet boiling range fraction is 765 kg/m^3 to 772 kg/m^3.

11. The method of claim 1, wherein the dewaxing catalyst comprises 0.1 wt% to 2.0 wt% of Pt, Pd, or a combination thereof, relative to a weight of the dewaxing catalyst.

12. The method of claim 1, wherein the dewaxing catalyst further comprises a binder.

13. The method of claim 1, further comprising separating the deoxygenated liquid fraction from the deoxygenated effluent.

14. A method for producing a renewable jet boiling range fraction, comprising:

contacting a bio-derived feedstock with a hydrotreatment catalyst under effective hydrotreatment conditions to produce a deoxygenated effluent comprising a deoxygenated liquid fraction, the bio-derived feedstock comprising 70 wt% or more of C_{17+} carbon chains;

contacting at least a portion of the deoxygenated liquid fraction with a dewaxing catalyst comprising ZSM-48 and Pt, Pd, or a combination thereof under effective dewaxing conditions to produce an isomerized effluent, the effective dewaxing conditions comprising a severity index of 3 to 9, a weighted average bed temperature of 300°C to 350°C, a pressure of 1.4 MPa-g to 14 MPa-g, and a LHSV of 1.0 hr^{-1} to 8.0 hr^{-1} relative to a volume of dewaxing catalyst; and

separating the isomerized effluent to form a jet boiling range fraction and one or more additional fractions, the jet boiling range fraction comprising a T90 distillation point of 300°C or less, a freeze point of -40°C or less, 40 wt% or more of C_{17}–C_{18} hydrocarbons and 45 wt% or less of C_{14}–C_{17} hydrocarbons, and a flash point of 38°C or more.

15. The method of claim 14, wherein a yield of the jet boiling range fraction is 70 wt% or more relative to a weight of the at least a portion of the deoxygenated liquid fraction.

16. The method of claim 14, wherein the jet boiling range fraction comprises 1.0 wppm or less of oxygen.

17. The method of claim 14, wherein the jet boiling range fraction comprises a final boiling point of 300°C or less.

18. The method of claim 14, wherein the bio-derived feedstock comprises 5.0 wt% or less of C_{19+} carbon chains.

19. The method of claim 14, wherein the at least a portion of the deoxygenated effluent comprises 50 wt% or more of C_{17+} n-paraffins.